

CHECK-LIST AND KEYS TO THE FAMILIES AND SUBFAMILIES OF THE HEMIPTERA- HETEROPTERA

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IN 1955 (*Ann. Mag. nat. Hist.* (12) 8: 257-267) the present authors published a tentative check-list of family and subfamily names in Heteroptera.

A number of omissions of synonyms and a few errors were brought to our notice in correspondence. Indeed the whole object of publishing that tentative list was to solicit such criticism and suggestions. A position has now been reached where the publication of a new list is advisable.

We have considered a list of emendations and additions but such a list would be hard to use and would need continual reference to the original publication.

A new list is therefore given in full, and to make it more useful to students a Key to the families and subfamilies, based only on external characters, is appended.

Again, the arrangement has no phylogenetical significance. For this, students should refer to Fig. 1. which indicates the relationships of the families based on recent research.

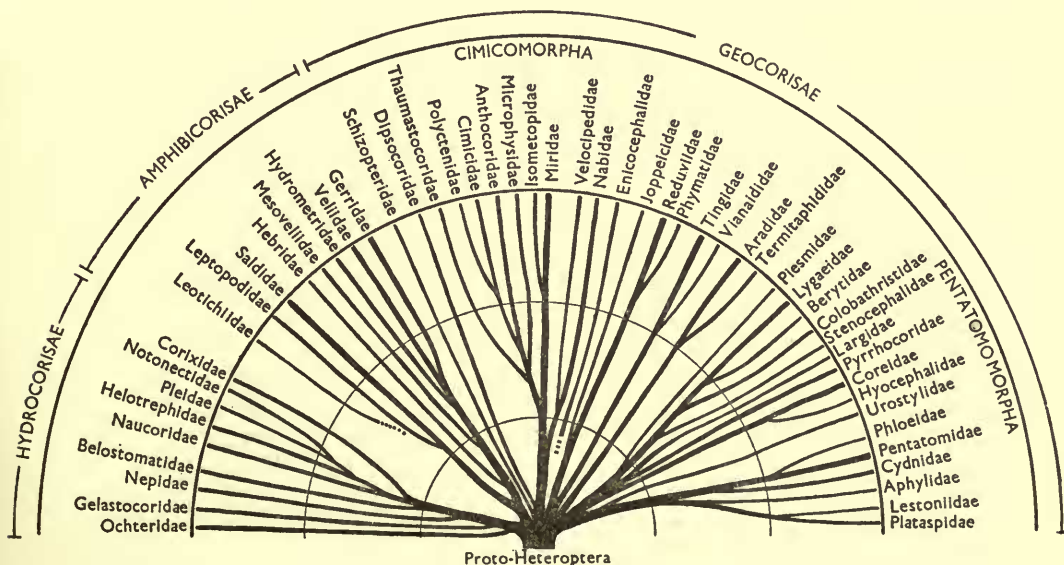


FIG. 1

In the present list we have decided to accept the Amyot & Serville, 1843 names as valid, but, in case they are later invalidated, we give the next oldest valid name.

Contrary to current usage, we believe that the Heteroptera represent merely a suborder and, together with the suborder Homoptera, comprise the Order Hemiptera. It is preferable not to regard the Heteroptera as the typical suborder and to replace the name Heteroptera by Hemiptera. We believe that such procedure, usually applied to subfamilies and tribes, is not appropriate to the highest categories where it would prove confusing.

The existence between the Heteroptera and Homoptera of such connecting links as the Peloridiidae, combined with the very uniform mouth parts and metamorphosis within the Order, indicate that these two groups are best regarded as suborders of the comprehensive Hemiptera.

The innumerable group-names of Lethierry & Severin, 1893-94 and of Haglund, 1895 have not been included, since they are mainly tribal.

Order HEMIPTERA

Suborder *HETEROPTERA*

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| Family | <i>Plataspidae</i> Dallas, 1851, <i>Cat. Hemipt. Brit. Mus.</i> 1, p. 61. |
| Synonym | Arthropteridae Fieber, 1860, <i>Europ. Hemipt.</i> , p. 27. |
| Synonym | Coptosominae Kirkaldy, 1909, <i>Cat. Hemipt.</i> 1. Cimicidae, p. 36. |
| Synonym | Coptosomatidae Reuter, 1912, <i>Öfv. Finska Vet. Soc. Förh.</i> 54A, No. 6: 45. |
| Synonym | Brachyplatidae Leston, 1952, <i>Ann. Mag. nat. Hist.</i> (12), 5: 512. |
| Family | <i>Lestoniidae</i> (China), 1955, <i>Ann. Mag. nat. Hist.</i> (12), 8: 210 (Lestoniinae). |
| Family | <i>Cydnidae</i> (Billberg), 1820, <i>Enum. Ins. Billb.</i> , p. 70 (Cydnides). |
| Subfamily 1. | Thyreocorinae (Amyot & Serville), 1843, <i>Hist. nat. Hémipt.</i> , pp. xviii, 60 (Thyreocorides). |
| Synonym | Corimelaeninae Uhler, 1872, <i>Report U.S. Geol. Survey</i> (1871), 4: 471. |
| Synonym | Thyreocorinae Van Duzee, 1907, <i>Bull. Buffalo Soc. nat. Sci.</i> 8, pt. 5: 5. |
| Subfamily 2. | Cydninae (Amyot & Serville), 1843, <i>Hist. nat. Hémipt.</i> , pp. xx, 87 (Cydnides). |
| Synonym | Cydninae Dallas, 1851, ¹ <i>Cat. Hemipt. Brit. Mus.</i> 1, p. 109 (<i>partim</i>). |
| Subfamily 3. | Sehirinae (Amyot & Serville), 1843, <i>Hist. nat. Hémipt.</i> , pp. xxi, 96 (Sehirides). Sehirinae (Stål), 1864, <i>Hemipt. Afric.</i> 1, p. 18. (Sehirida). |
| Synonym | Cydninae Dallas, 1851, <i>Cat. Hemipt. Brit. Mus.</i> 1, p. 109 (<i>partim</i>). |
| Family | <i>Pentatomidae</i> (Leach), 1815, <i>Brewster's Edinb. Encyc.</i> 9: 121 (Pentatomides). |

¹ This work has been consistently wrongly referred to as "List Hem. B.M."

- Synonym Cimicidae Kirkaldy, 1909, *Cat. Hemipt.* 1, p. 1.
- Subfamily 1. Asopinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xix, 77 (Asopides).
- Synonym Asopinae (Spinola), 1850, *Tav. Sin. Hem. ex Mem. Math. Fis. Soc. Ital. Sci. Modena*, 25, 1 : 69 (1852) (Asopoideae).
- Synonym Amyotinae Schouteden, 1906, *Wytsman. Gen. Ins.* 52 : 2.
- Synonym Amyotinae Leston, 1953, *Ent. Gaz.* 4 : 19.
- Synonym Arminae Bergroth, 1908, *Mem. Soc. ent. belg.* 15 : 180.
- Synonym Tahitocorinae (Yang), 1935 *Ann. Mag. nat. Hist.* (10), 16 : 480 (Tahitocoridae).
- Subfamily 2. Tessaratominae¹ (Stål), 1865, *Hemipt. Afric.* 1, p. 33 (Tessaratomida).
- Subfamily 3. Eumenotinae Esaki, 1922, *Ins. Insc. Mens.* 10 : 196 (under Aradidae); 1930, *Ann. Mag. nat. Hist.* (10) 5 : 630 (under Pentatomidae).
- Subfamily 4. Cyrtocorinae Distant, 1880, *Biol. centr. Amer. Rhynchota, Het.* 1, p. 43.
- Subfamily 5. Dinidorinae (Stål), 1870, *Enum. Hemipt.*, p. 79.
- Subfamily 6. Phyllocephalinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xxix, 174 (Phyllocephalides).
- Synonym Phyllocephalinae (Dallas), 1851, *Cat. Hemipt. Brit. Mus.* 1, p. 350 (Phyllocephalidae).
- Subfamily 7. Pentatominae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xxiv, 124 (Pentatomides).
- Synonym Pentatominae Stål, 1864, *Hemipt. Afric.* 1, pp. 32, 76.
- Synonym Halydidae Dallas, 1851, *Cat. Hemipt. Brit. Mus.* 1, p. 150.
- Synonym Sciocoridae Dallas, 1851, *Cat. Hemipt. Brit. Mus.* 1, p. 130.
- Synonym Sciocorides Amyot & Serville, 1843, *Hist. nat. Hémipt.*, p. 118.
- Synonym Macropeltidae Fieber, 1860, *Europ. Hemipt.*, pp. 26, 327.
- Synonym Discocephalidae Fieber, 1860, *Europ. Hemipt.*, pp. 26, 326.
- Synonym Aeliidae Douglas & Scott, 1865, *Brit. Hemipt. Heteroptera*, p. 14.
- Synonym Rhaphigastridae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xxv, 141 (Rhaphigastrides).
- Subfamily 8. Scutellerinae (Leach), 1815, *Brewster's Edinb. Encyc.* 9 : 121 (Scutellerida).
- Synonym Pachycorinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xvi, 34 (Pachycorides).
- Synonym Tetyrinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xvii, 45 (Tetyrides).
- Synonym Eurygastrinae Amyot & Serville, 1843, *Hist. nat. Hémipt.*, pp. xviii, 51 (Eurygastrides).
- Synonym Odontoscelidae Douglas & Scott, 1865, *Brit. Hemipt. Heteroptera*, p. 13.
- Synonym Eurygastridae Douglas & Scott, 1865, *Brit. Hemipt. Heteroptera*, p. 13.

¹ See China, 1954, *Ent. Mon. Mag.* 90 : 128 for Tessaratomides Schilling, 1829. Edessides Amyot & Serville, 1843, pp. xxvii, 155 and of Dallas, 1851 and Dohrn, 1859 cover Pentatominae as well as Tessaratominae.

- Subfamily 9. Podopinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xviii, 56 (Podopides).
- Synonym Oxynotidae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xviii, 58 (Oxynotides).
- Synonym Graphosomatinae Jakowleff, 1884, *Hor. Soc. ent. Ross.* **18** : 204.
- Subfamily 10. Serbaninae Leston, 1953, *Rev. Brasil Biol.*, **13** : 137.
- Subfamily 11. Acanthosomatinae (Stål), 1864, *Hemipt. Afric.* **1**, pp. 33, 219 (Acanthosomida).
(Leston, 1953, *Ent. Gazette* **4** : 20 elevates this group to family rank. We have decided that it is better to regard it as a subfamily as has been done with such families as Aepophilidae and Aphelocheiridae.)
- Subfamily 12. Canopinae¹ (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xix, 70 (Canopides).
- Synonym Canopinae Horvath, 1919, *Ann. Mus. nat. Hung.* **17** : 205.
- Subfamily 13. Megaridinae¹ McAtee & Malloch, 1928, *Proc. U.S. nat. Mus.* **72** : 1.
- Family **Aphylidae** (Bergroth), 1906, *Zool. Anz.* **29** : 646 (Aphylinae).
- Synonym Aphylidae Reuter, 1912, *Öfv. Finska Vet. Soc. Förh.* **54A**, No. 6 : 46.
- Family **Urostylidae** Dallas, 1851, *Cat. Hemipt. Brit. Mus.* **1**, p. 313.
- Synonym Urolabidae (Stål), 1876, *Svensk. Vet. Ak. Handl.* **14** : 4 : 115 (Urolabida).
- Synonym Urolabididae Reuter, 1912, *Öfv. Finska Vet. Soc. Förh.* **54**, No. 6 : 37.
- Subfamily 1. Urostylinae Dallas, 1851, *Cat. Hemipt. Brit. Mus.* **1**, p. 313.
- Subfamily 2. Saileriolinae China & Slater, 1956, *Pacific Sci.* **10** : 412.
- Family **Phloeidae** (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xxiv, 115 (Phloeides).
- Synonym Phloeidae Dallas, 1851, *Cat. Hémipt. Brit. Mus.* **1**, p. 149.
- Family **Coreidae** Leach, 1815, *Brewster's Edinb. Encyc.* **9** : 121.
- Synonym Lygaeidae Kirkaldy, 1899, *Entomologist*, **32** : 220.
- Subfamily 1. Meropachydinae Stål, 1867, *Öfv. Vet. Ak. Förh.* **24** : 535-536 (Meropachydida).
- Synonym Merocorinae (Stål), 1870, *Enum. Hemipt.* **1**, p. 125 (Merocorina).
- Subfamily 2. Coreinae (Stål), 1867, *Öfv. Vet.-Ak. Förh.* **24** : 535-543 (Coreida).
- Synonym Centroscelinae Kirkaldy, 1899, *Entomologist*, **32** : 220.
- Synonym Anisoscelidae Dallas, 1852, *Cat. Hemipt. Brit. Mus.*, p. 449.
- Subfamily 3. Pseudophloeinae (Stål), 1867, *Öfv. Vet.-Ak. Förh.* **24** : 535 (Pseudophloeida).
- Synonym Arenocorinae Bergroth, 1913, *Mem. Soc. ent. belg.* **22** : 135.
- Subfamily 4. Agriopocorinae Miller, 1953, *Proc. Linn. Soc. N.S. Wales*, **78**, pts. 5 and 6 : 233.
- Subfamily 5. Rhopalinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xxxiii, 243 (Rhopalides).
- Synonym Rhopalidae Dallas, 1852, *Cat. Hemipt. Brit. Mus.*, p. 520.

¹ These two subfamilies have been previously referred to the Plataspidae (McAtee & Malloch, 1928, *Proc. U.S. nat. Mus.* **72** : 1) and to the Cydnidae (China & Miller, 1955).

- Synonym Corizidae Douglas & Scott, 1865, *Brit. Hemipt. Heteroptera*, p. 17.
- Synonym Chorosomidae Douglas & Scott, 1865, *Brit. Hemipt. Heteroptera*, p. 17.
- Synonym Corizinae Mayr, 1866, *Reise Freg. Novara, Zool. Hémipt.*: 2 : 121.
- Subfamily 6. Alydinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xxxiv, 221 (Alydides).
- Synonym Alydinae (Dallas), 1852, *Cat. Hemipt. Brit. Mus.* 2 : 467 (Alydidae).
- Synonym Coriscidae Stichel, 1925, *Illus. Bestimmungstabellen Deutsch. Wanzen*, p. 45.
- Family **Stenocephalidae** Dallas, 1852, *Cat. Hemipt. Brit. Mus.* 2 : 480.
- Synonym Dicranocephalidae (Scudder), 1957, *Proc. R. Ent. Soc. London (A)* 32 : 147 (Dicranocephalini).
- Family **Hyocephalidae** Bergroth, 1906, *Zool. Anz.* 29 : 649.
- Family **Lygaeidae** (Schilling), 1829, *Beitr. z. Ent.* 1 : 37. (Lygaeides).
- Synonym Myodochidae Kirkaldy, 1899, *Entomologist*, 32 : 220.
- Synonym Geocoridae Kirkaldy, 1902, *Journ. Bombay Nat. Hist. Soc.* 14 : 306.
- Synonym Pyrrhocoridae Kirkaldy, 1904, *Entomologist*, 37 : 280.
- Subfamily 1. Megalonotinae Slater, 1957, *Bull. Brooklyn ent. Soc.* 52, 2 : 35.
- Synonym Rhyparochrominae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xxxvi, 251 (Rhyparochromides). (Based on *Rhyparochromus* Curtis 1836 : type *Lygaeus chiragra* Fabr. 1794. = *Megalonotus* Fieber, 1860.
- Synonym Rhyparochrominae (Stål), 1862, *Öfv. Vet.-Ak. Förh.* 19 : 210 (Rhyparochromida). Based on *Rhyparochromus* Hahn 1826 : type *Cimex pini* L., 1758.
- Subfamily 2. Geocorinae (Stål), 1862, *Öfv. Vet.-Ak. Förh.* 19 : 212 (Geocorida).
- Subfamily 3. Blissinae (Stål), 1862, *Öfv. Vet.-Ak. Förh.* 19 : 210 (Blissida).
- Subfamily 4. Cyminae (Stål), 1862, *Öfv. Vet.-Ak. Förh.* 19 : 210 (Cymida).
- Subfamily 5. Lygaeinae (Stål), 1862, *Öfv. Vet.-Ak. Förh.* 19 : 210 (Lygaeida).
- Synonym Astacopinae Kirkaldy (*partim*), 1907, *Canadian Ent.* 39 : 244.
- Subfamily 6. Oxycareninae (Stål), 1862, *Öfv. Vet.-Ak. Förh.* 19 : 212 (Oxycarenida).
- Synonym Anemopharina Berg, 1879, *Hem. Argent.*, p. 285.
- Subfamily 7. Pamphantinae Barber & Bruner, 1933, *Journ. N.Y. Ent. Soc.* 41 : 532.
- Subfamily 8. Malcinae (Stål), 1866, *Hemipt. Afric.* 2, p. 121 (Malcida).
- Subfamily 9. Lipostemmatinae (Berg), 1879, *Hem. Argent.*, p. 288 (Lipostemmatina).
- Subfamily 10. Henestarinae (Douglas & Scott), 1865, *Brit. Hemipt. Heteroptera*, p. 22 (Henestaridae).
- Subfamily 11. Pachygronthinae (Stål), 1865, *Hemipt. Afric.* 2, pp. 121, 145 (Pachygronthida).
- Subfamily 12. Heterogastrinae (Stål), 1872, *Öfv. Vet.-Ak. Förh.* 29 : 40, 62 (Heterogastrina).

- Synonym Phygadicidae Douglas & Scott, 1865, *Brit. Hemipt. Heteroptera*
(The oldest group name is Phygadicidae Douglas & Scott but we do not propose to use it and consequently invoke the saving clause, custom versus priority.)
- Subfamily 13. Chauliopinae Breddin, 1907, *Deutsch. ent. Zeit.* **1907** : 40.
- Subfamily 14. Artheneinae (Stål), 1872, *Öfv. Vet.-Ak. Förh.* **29** : 38, 47 (Artheneina).
- Subfamily 15. Phasmosomatinae (Kiritshenko), 1938, *Trud. Zool. Inst. Baku*, **8** : 117.
N.B. The subfamily Bledionotinae Reuter, 1878, is regarded as only a tribe of the Megalonotinae.
- Family **Pyrrhocoridae** (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xxviii, 265 (Pyrrhocorides).
- Synonym Pyrrhocoridae Dohrn, 1859, *Cat. Hemipt.*, p. 36.
- Synonym Astemmatidae Spinola, 1850, *Tav. Sin. Hem.*, ex *Mem. Mat. Fis. Soc. Ital. Sci. Modena*, **25** : 79 (1852).
- Family **Largidae** (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xxxviii, 273 (Largides).
- Synonym Largidae Dohrn, 1859, *Cat. Hemipt.*, p. 36.
- Synonym Euryopthalminae Van Duzee, 1916, *Check-list Hemipt. America N. of Mexico*, p. 24.
- Family **Piesmatidae** (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, p. xl (Piesmides).
- Synonym Piesmidae Spinola, 1850, *Tav. Sin. Hem.* ex *Mem. Mat. Fis. Soc. Ital. Sci. Modena*, **25** : 84 (1852).
- Synonym Zosmenidae Dohrn, 1859, *Cat. Hemipt.*, p. 41.
- Synonym Zosmeridae Douglas & Scott, 1865, *Brit. Hemipt. Heteroptera*, p. 237.
- Family **Thaumastocoridae** Kirkaldy, 1908, *Proc. Linn. Soc. N.S. Wales*, **32** : (corrigenda).
- Synonym Thaumastotheriinae Kirkaldy, 1908, *Proc. Linn. Soc. N.S. Wales*, **32** : 777.
- Subfamily 1. Thaumastocorinae Kirkaldy, 1908, *Proc. Linn. Soc. N.S. Wales*, 1907, **32** : 768-788.
- Subfamily 2. Xylastodorinae Barber, 1920, *Bull. Brooklyn ent. Soc.* **15** : 98-105.
- Synonym Discocorinae Kormilev, 1955, *Rev. Soc. Ent. Argentina* **18** : 7-10.
- Family **Berytidae** Fieber, 1851, *Genera Hydroc.*, p. 9.
- Synonym Neididae Kirkaldy, 1902, *Journ. Bombay Nat. Hist. Soc.* **14** : 302.
(There is no need to change the old family name Berytidae because *Berytus* F., 1803, is a synonym of *Neides* Latr., 1802.)
- Subfamily 1. Berytinae Puton, 1886, *Cat. Hémipt. Palaearct.* edn. 3, p. 19.
- Subfamily 2. Metacanthinae Douglas & Scott, 1865, *Brit. Hemipt. Heteroptera*, pp. 99, 145.
- Family **Colobathristidae** (Stål), 1866, *Hemipt. Afric.* 2, p. 121 (Colobathristida).
- Family **Aradidae** (Spinola), 1837, *Essai Hémipt.*, p. 157 (Aradites).
- Subfamily 1. Isoderminae Stål, 1872, *Svenska Vet.-Ak. Handl.* **10** : 4.
- Subfamily 2. Prosympiestinae Usinger & Matsuda, 1959, *Class. Aradidae, Brit. Mus.* p. 62.

- Subfamily 3. Chinamyersiinae Usinger & Matsuda, 1959, *Class. Aradidae, Brit. Brit. Mus.* p. 79.
- Subfamily 4. Aradinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xli, 306 (Aradides).
- Subfamily 5. Calisiinae (Stål), 1873, *Svenska Vet.-Ak. Handl.* **11**, No. 2 : 138 (Calisaria).
- Subfamily 6. Aneurinae (Douglas & Scott), 1865, *Brit. Hemipt. Heteroptera*, pp. 26, 267 (Aneuridae).
- Subfamily 7. Carventinae Usinger, 1950, *VIIth Intern. Congr. Ent.*, p. 176.
- Subfamily 8. Mezirinae Oshanin, 1908, *Verz. Paläark. Hem.*, pp. 4, 78.
- Synonym Brachyrhynchinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xli, 303 (Brachyrhynchides).
- Synonym Dysodiinae Reuter, 1912, *Öfv. Finska Vet. Soc. Förh.* **54A** : 33, 49, 57.
- Synonym Chelonocorinae Miller, 1938, *Ann. Mag. Nat. Hist.* (11) **1** : 498-510.
- Family **Termitaphididae** Myers, 1924, *Psyche*, **31**, 6 : 267.
- Synonym Termitocoridae Silvestri, 1911, *Portici Boll. Lab. Zool.* **5** : 231-236.
- Family **Joppeicidae** Reuter, 1910, *Acta Soc. Sci. Fenn.* **37**, 3 : 75.
- Family **Tingidae** (Costa A), 1838, *Cimicum Regnis Neap. Cent.* **1** : 18, (Tingini).
- Synonym Tingidites Laporte, 1832, *Essai Classif. Syst. Hém.* p. 47 ; invalidated as so-called vernacular name by Int. Comm. Zool. Nomenclature, Direction 6, *Opinion and Declarations I.C.Z.N.* Vol. 2, Sect. 13, 1954.
- Synonym Tingidae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xi, 295 (Tingides).
- Synonym Tingitidae auctt. Invalidated by International Commission on Zoological Nomenclature. Opinion 143 (1943).
- Subfamily 1. Tinginae (Douglas & Scott), 1865, *Brit. Hemipt. Heteroptera*, p. 24 (Tingididae).
- Subfamily 2. Cantacaderinae (Stål), 1873, *Enum. Hemipt.* **3** : 116 (Cantacaderaria).
- Subfamily 3. Agramminae (Douglas & Scott), 1865, *Brit. Hemipt. Heteroptera*, pp. 24, 242 (Agrammidae).
- Synonym Serenthiinae Stål, 1873, *Enum. Hemipt.* **3** : 116.
- Family **Vianaididae** Kormilev, 1955, *Rev. Ecuat. Ent.* **2** (3-4) : 465-477.
- Family **Enicocephalidae** (Stål), 1860, *Rio Jan. Hémipt. I* : 81 K. *Svensk. Vet.-Ak. Handl.* **2**, No. 7, 1858.
- Synonym Henicocephalidae (Stål), 1865, *Hemipt. Afric.* **3**, p. 165 (Henicocephalida).
- Subfamily 1. Enicocephalinae Ashmead, 1893, *Proc. Ent. Soc. Wash.* **2** : 328.
- Subfamily 2. Aenictopechinae Usinger, 1932, *Pan Pacific Entomologist*, **8** : 149.
- Family **Phymatidae** (Laporte), 1832, *Essai Classif. Syst. Hémipt.*, p. 14 (Phymatites).
- Synonym Phymatides Amyot & Serville, 1843, *Hist. nat. Hémipt.*, pp. xxxix, 288.
- Synonym Macrocephalidae Kirkaldy, 1899, *Entomologist* **32** : 221.

- Subfamily 1. Macrocephalinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xxxix, 291 (Macrocephalides).
- Synonym Macrocephalinae (Dohrn), 1859, *Cat. Hemipt.*, p. 41 (Macrocephalidae).
- Subfamily 2. Phymatinae (Dohrn), 1859, *Cat. Hemipt.*, p. 41 (Phymatidae).
- Subfamily 3. Carcinocorinae Handlirsch, 1897, *Ann. K.K. Nat. Hofmus. Wien*, **12** : 142.
- Subfamily 4. Themonocorinae (Carayon, Usinger & Wygodzinski), 1958, *Rev. Zool. bot. Afr.* **57** fasc. 3-4 : 278 (Themonocorini). These authors regard the genus *Themonocoris* as intermediate between the Reduviidae and Phymatidae and consequently sink the latter family to subfamily rank in the Reduviidae, placing *Themonocoris* in a tribe. We prefer for the present to retain the Phymatidae as a family and to raise the tribe Themonocorini to subfamily rank.
- Family **Elasmodemidae** Lethierry & Severin, 1896, *Cat. Hémipt.* **3** : 49.
- Synonym Elasmocorinae Usinger, 1943, *Ann. ent. Soc. Amer.* **36** : 612.
- Synonym Elasmodemidae Wygodzinski, 1944, *Revue Brasil. Biol.* **4**(2) : 205.
- Family **Reduviidae** Latreille, 1807, *Gen. Crust. Ins.* **3** : 126.
- Subfamily 1. Emesinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xlviii, 393 (Emesides).
- Synonym Emesinae Spinola, 1850, *Tav. Sin. Hem.*, p. 45 ex *Mem. Mat. Fis. Soc. Ital. Sci. Modena*, **25** (1852).
- Synonym Ploiariinae, Costa, 1852, *Cimic, Regni Neap. Cent.* **4** : 66.
- Subfamily 2. Saicinae (Stål), 1859, *Berlin ent. Zeit.* **3** : 328 (Saicida).
- Subfamily 3. Visayanocorinae Miller, 1952, *Eos*, **28** : 88-90.
- Subfamily 4. Holoptilinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xlii, 318 (Holoptilides).
- Synonym Holoptilinae (Stål), 1859, *Berlin ent. Zeit.* **3** : 328 (Holoptilida).
- Subfamily 5. Tribelocephalinae (Stål), 1866, *Hemipt. Afric.* **3**, p. 44 (Tribelocephalida).
- Subfamily 6. Bactrodinae (Stål), 1866, *Hemipt. Afric.* **3**, p. 45 (Bactrodida).
- Subfamily 7. Stenopodinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xlviii, 386 (Stenopodides).
- Synonym Stenopodinae (Stål), 1859, *Berlin ent. Zeit.* **3** : 328 (Stenopodida).
- Subfamily 8. Salyavatinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xlv, 349 (Salyavatides).
- Synonym Salyavatinae (Stål), 1859, *Berlin ent. Zeit.* **3** : 328 (Salyavatida).
- Subfamily 9. Sphaeridopinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xlvii, 381 (Sphaeridopides).
- Synonym Sphaeridopinae (Pinto), 1927, *Bol. Biol. S. Paulo*, **6** : 43, 47 (Sphaeridopidae).
- Subfamily 10. Manangocorinae Miller, 1954, *Idea*, **10** : 2.
- Subfamily 11. Physoderinae Miller, 1954, *Tijdsch v. Ent.* **96** : 82.
- Subfamily 12. Centrocneminae Miller, 1956, *Bull. Brit. Mus. Ent.* **4** : 219-283.

- Subfamily 13. Chryxinae Champion, 1898, *Biol. Centr. Amer. Rhynchota*, *Het.* **2** : 180.
- Subfamily 14. Vesciinae Fracker & Bruner, 1924, *Ann. ent. Soc. Amer.* **17** : 165.
- Synonym Choparditidae Villiers, 1944, *Bull. Soc. ent. Fr.* **49** : 79.
- Subfamily 15. Cetherinae Jeannel, 1919, *Voy. Alluaud Jeannel Afr. or., Hém.*, 1911-12, p. 178.
- Synonym Eupheninae Miller, 1955, *Ann. Mag. nat. Hist.* (12) **8** : 449-452.
- Subfamily 16. Reduviinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xliii, 333 (Reduviides).
- Synonym Reduviinae Spinola, 1850, *Tav. Sin. Hem.*, p. 145, ex *Mem. Mat. Fis. Soc. Ital. Sci. Modena*, **25** (1852).
- Synonym Acanthaspininae (Stål), 1866, *Hemipt. Afric.* **3**, p. 44 (Acanthaspidida).
- Subfamily 17. Triatominae Jeannel, 1919, *Voy. Alluaud Jeannel Afr. or., Hém.*, pp. 176, 177.
- Synonym Conorhininae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xlviii, 383 (Conorhinides).
- Note.* Although Conorhininae would be the oldest group name we do not intend to break current usage of Triatominae. *Conorhinus* Laporte, 1832 (p. 77) is an unnecessary new name for *Triatoma* Laporte, 1832, (p. 11).
- Subfamily 18. Piratinae (Stål), 1859, *Berlin ent. Zeit.* **3** : 328 (Peiratida).
- Subfamily 19. Phimophorinae Handlirsch, 1897, *Verh. zool. bot. Ges. Wien*, **47** : 408.
- Subfamily 20. Mendanocorinae Miller, 1956, *Ann. Mag. nat. Hist.* (12), **9** : 587-589.
- Subfamily 21. Hammacerinae (Stål), 1859, *Berlin ent. Zeit.* **3** : 328 (Hammacerida).
- Synonym Hammatocerinae (Stål), 1862, *Stett. ent. Zeit.* **23** : 455 (Hammatocerida).
- Synonym Microtominae Schumacher, 1924, *Deutsch ent. Zeit.* **1924** : 336.
- Subfamily 22. Ectrichiinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xlv, 342 (Ectrichodides).
- Synonym Ectrichiinae Spinola, 1850, *Tav. Sin. Hem.*, pp. 44, 45, ex *Mem. Mat. Fis. Soc. Ital. Sci. Modena*, **25** (1852).
- Subfamily 23. Rhaphidosominae Jeannel, 1919, *Voy. Alluaud Jeannel Afr. or., Hém.*, p. 263.
- Subfamily 24. Harpactorinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xlv, 355 (Harpactorides).
- Synonym Harpactorinae Spinola, 1850, *Tav. Sin. Hem.*, p. 45, ex *Mem. Mat. Fis. Soc. Ital. Sci. Modena*, **25** (1852).
- Synonym Reduviinae (Stål), 1859, *Öfv. Vet.-Ak. Förh.* **16** : 195 (Reduviides).
- Subfamily 25. Apiomerinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xlv, 350 (Apiomerides).
- Synonym Apiomerinae (Stål), 1859, *Berlin ent. Zeit.* **3** : 328 (Apiomerida).
- Subfamily 26. Ectinoderinae (Stål), 1866, *Öfv. Vet.-Ak. Förh.* **23** : 245 (Ectinoderida).
- Subfamily 27. Phonolibinae Miller, 1952, *Eos*, **28** : 86.
- Synonym Perissorhynchinae Miller, 1952, *Eos*, **28** : 87.

- Subfamily 28. Tegeinae Villiers, 1948, *Hémipt. Rédouv. Afr. noire*, p. 171.
- Subfamily 29. Diaspidiinae Miller, *Bull. Brit. Mus., Ent.* **8** : 2 (in press).
- Family ***Pachynomidae*** (Stål), 1873, *Enum. Hemipt.* **3** : 107 (Pachynomina).
- Synonym Pachynomidae Carayon, 1954, *Bull. Soc. Zool. France* **79** : 191 (as a family).
- Family ***Velocipedidae*** Bergroth, 1891, *Wien ent. Zeit.* **10** : 265.
- Synonym Scotomedinae Blöte, 1945, *Zool. Meded.* **25** : 323 (as subfamily of Nabidae).
- Family ***Nabidae*** Costa, 1852, *Cimic. Regni. Neap. Cent.* **3** : 66.
- Subfamily 1. Nabinae Reuter, 1890, *Rev. Ent.* **9** : 293.
- Synonym Reduviolinae Reuter & Poppius, 1909 (not Reuter, 1890), *Acta. Soc. Sci. Fenn.* **37**, 2 : 3.
- Synonym Coriscinae (Stål), 1873, *Enum. Hemipt.* **3** : 106 (Coriscina).
- Subfamily 2. Prostemmae Reuter, 1890, *Rev. Ent.* **9** : 289.
- Synonym Nabinae Reuter & Poppius, 1909 (not Reuter, 1890), *Acta Soc. Sci. Fenn.* **37** : 2, 3.
- Subfamily 3. Arachnocorinae Reuter, 1890, *Rev. Ent.* **9** : 292.
- Subfamily 4. Gorpinae Reuter, 1909, *Ann. Soc. ent. belg.* **53** : 423.
- Subfamily 5. Carthasinae Blatchley, 1926, *Het. East N. Amer.*, pp. 538-539.
- Family ***Polyctenidae*** Westwood, 1874, *Thesaur. Ent.*, p. 197.
- Family ***Cimicidae*** (Latreille), 1804, *Hist. nat. Crust. Ins.* **12** : 235 (Cimicidae).
- Synonym Cimicidae (Leach), 1815, *Brewster's Edinb. Encyc.* **9** : 122 (Cimicida).
- Synonym Acanthiadae Fieber, 1861, *Europ. Hemipt.*, pp. 37, 135.
- Synonym Acanthiidae Douglas & Scott, 1865 (*nec* Leach 1815), *Brit. Hémipt. Heteroptera* p. 37.
- Synonym Clinocoridae Kirkaldy, 1906, *Trans. Amer. ent. Soc.* **32** : 147.
- Subfamily 1. Cimicinae Van Duzee, 1916, *Check-list Hemipt. Amer. N. of Mexico*, p. 33.
- Subfamily 2. Haematosiphoninae Jordan & Rothschild, 1912, *Novit. Zool.* **19** : 352.
- Subfamily 3. Cacodminae Kirkaldy, 1899, *Bull. Liverpool Mus.* **2** : 45.
- Subfamily 4. Primicimicinae Usinger (in press).
- Family ***Anthocoridae*** (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xxxvii, 262 (Anthocorides).
- Synonym Anthocoridae Fieber, 1851, *Genera Hydroc.*, p. 9.
- Subfamily 1. Lyctocorinae Reuter, 1884, *Monog. Anthoc.*, *Acta Soc. Sci. Fenn.* **14** (1885) : 558.
- Subfamily 2. Anthocorinae Reuter, 1884, *Monog. Anthoc.*, *Acta Soc. Sci. Fenn.* **14** (1885) : 558.
- Subfamily 3. Dufouriellinae Van Duzee, 1916, *Check-list Hemipt. Amer. N. of Mexico*, p. 35.
- Synonym Xylocorinae Reuter, 1884, *Monog. Anthoc.*, *Acta Soc. Sci. Fenn.* **14** (1885) : 558.
- Family ***Microphysidae*** Dohrn, 1859, *Cat. Hemipt.*, p. 36.
- Subfamily 1. Microphysinae China, 1953, *Ann. Mag. nat. Hist.* (12), **6** : 73.
- Subfamily 2. Plokiophilinae China, 1953, *Ann. Mag. nat. Hist.* (12), **6** : 73.

- Family ¹**Miridae** (Hahn), 1831, *Wanz. Ins.* 1, p. 234 (Mirides).
 Synonym Capsidae (Burmeister), 1835, *Handb. Ent.* 2, p. 263. (Capsini).
 Synonym Phytocoridae Fieber, 1858, *Wien ent. Monatschrift*, 2 : 289.
 Subfamily 1. Mirinae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xxxviii, 277 (Mirides).
 Synonym Mirinae (Reuter), 1910, *Acta. Soc. Sci. Fenn.* 37 : 109, 128, 155 (Mirina).
 Subfamily 2. Orthotylinae Van Duzee, 1916, *Check-list Hemipt. Amer. N. of Mexico*, p. 203.
 Synonym Heterotominae (Reuter), 1910, *Acta. Soc. Sci. Fenn.* 37, 3 : 114 (Heterotomina).
 Synonym Cyllecorinae Oshanin, 1912, *Kat. Paläarkt. Hemipt.*, p. 72.
 Subfamily 3. Phylinae (Douglas & Scott), 1865, *Brit. Hemipt. Heteroptera*, pp. 30, 346 (Phylidae).
 Synonym Plagiognathinae Oshanin, 1912, *Kat. Paläarkt. Hemipt.*, p. 77.
 Subfamily 4. Brycorinae (Douglas & Scott), 1865, *Brit. Hemipt. Heteroptera*, pp. 28, 276 (Bryocorida).
 Subfamily 5. Deraeocorinae (Douglas & Scott), 1865, *Brit. Hemipt. Heteroptera*, pp. 29, 315 (Deraeocoridae).
 Synonym Termatophylidae (Reuter), 1888, *Wien. ent. Zeit.* 3 : 218 (Termatophylina).
 Synonym Cliveneminae (Reuter), 1875, *Caps. Bor. Amer.* p. 62 ; *Öfv. Vet.-Ak. Förh.* 32 No. 9 : 54-92 (Clivenemaria).
 Synonym Hyaliodinae Knight, 1943, *Ent. News*, 54 (5) : 19.
 Synonym Ambraciinae (Reuter), 1910, *Acta. Soc. Sci. Fenn.* 37 : 109, 154 (Ambraciina).
 Subfamily 6. Cylapinae Kirkaldy, 1903, *Wien. ent. Zeit.* 22 : 13.
 Synonym Bothynotinae (Reuter), 1910, *Acta. Soc. Sci. Fenn.* 37 : 109, 155 (Bothynotina).
 Synonym Lygaeoscytinae (Reuter), 1910, *Acta. Soc. Sci. Fenn.* 37 : 110.
 Family **Isometopidae** Fieber, 1860, *Wien ent. Monat.* 4 : 259.
 Carayon, probably rightly, suggests that the Isometopidae are merely a subfamily of Miridae.
 Family **Dipsocoridae** Dohrn, 1859, *Cat. Hemipt.*, p. 36.
 Synonym Cryptostemmatidae McAtee & Malloch, 1925, *Proc. U.S. Nat. Mus.* 17 : 1.
 Synonym Ceratocombidae Fieber, 1860, *Europ. Hemipt.*, pp. 25, 39, 142.
 Family **Schizopteridae** (Reuter), 1891, *Acta Soc. Sci. Fenn.* 19, 6 : 3 (Schizopterina).
 Family **Hydrometridae** (Billberg), 1820, *Enum. Ins. Mus. Billb.*, p. 67 (Hydrometrices).
 Synonym Limnobatidae Fieber, 1860, *Europ. Hemipt.*, p. 23.

¹ The synonyms of Douglas & Scott listed in our previous paper (1955) have been omitted under each subfamily as not completely covering the same field as the current subfamilies. Tribal names have also been omitted.

- Subfamily 1. Hydrometrinae Esaki, 1927, *Entomologist*, **60** : 4.
 Subfamily 2. Limnobatodinae Esaki, 1927, *Entomologist*, **60** : 4.
 Subfamily 3. Heterocleptinae Villiers, 1948, *Réduv. Afr. noire*, p. 174 (described in the Reduviidae).
 Synonym Hydrobatodinae China & Usinger, 1949, *Rev. Zool. Bot. Afr.* **41** : 4 : 318.
 Family **Gerridae** Leach, 1815, *Brewster's Edinb. Encyc.* **9** : 123.
 Synonym Gerridae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. 1, 410 (Gerrides).
 Synonym Hydrometrinae (Fieber), 1860, *Europ. Hemipt.*, p. 24 (Hydrometrae).
 Subfamily 1. Gerrinae Bianchi, 1896, *Ann. Mus. Petersb.* **1896** : 69.
 Subfamily 2. Halobatinae Bianchi, 1896, *Ann. Mus. Petersb.* **1896** : 69.
 Subfamily 3. Hermatobatinae Coutière & Martin, 1901, *C.R. Acad. Sci. Paris*, **132** : 1066-1068.
 Subfamily 4. Rhagadotarsinae Lundblad, 1933 *Archiv. für Hydrobiol. Suppl.* **12** : 411.
 Subfamily 5. Ptilomerinae Esaki, 1927, *Eos*. **2** : 252.
 Family **Veliidae** (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. 1., 418 (Velides).
 Synonym Veliidae Dohrn, 1859, *Cat. Hemipt.*, p. 53.
 Synonym Veliidae (Reuter), 1912, *Öfv. Finska Vet. Soc. Förh.* **6** : 14, 18. (Veliadae).
 Subfamily 1. Perittopinae China & Usinger, 1949, *Ann. Mag. nat. Hist.* (12), **2** : 350.
 Subfamily 2. Rhagoveliinae China & Usinger, 1949, *Ann. Mag. nat. Hist.* (12), **2** : 350.
 Subfamily 3. Hebroveliinae (Lundblad), 1939, *Ent. Tidsk.* **60**, 1-2 : 33 (Hebroveliidae).
 Subfamily 4. Hydroessidae (Fieber), 1860, *Europ. Hemipt.*, p. 23 (Hydroessae).
 Synonym Microveliinae China & Usinger, 1949, *Ann. Mag. nat. Hist.* (12), **2** : 351.
 Subfamily 5. Veliinae China & Usinger, 1949, *Ann. Mag. nat. Hist.* (12), **2** : 351.
 Subfamily 6. Haloveliinae Esaki, 1930, *Journ. F. Malay S. Mus.* **16** : 22.
 Synonym Haloveliidae Poisson, 1956, *Mém. Inst. Sci. Madagascar* (E) **7** : 255.
 Family **Mesoveliidae** Douglas & Scott, 1867, *Ent. mon. Mag.* **4** : 3.
 Synonym Mesoveliadae Reuter, 1912, *Öfv. Finsk. Vet. Soc. Förh.* **6** : 17, 23, 47, 49.
 Subfamily 1. Mesoveliinae Usinger (in press).
 Subfamily 2. Mesoveloideinae Usinger (in press). (See Hungerford 1929, *Bull. Brooklyn ent. Soc.* **24** : 228.)
 Subfamily 3. Macroveliinae (McKinstry), 1942, *Pan Pacif. Ent.* **18** : 91 (Macroveliidae).
 Family **Hebriidae** (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xl, 293 (Hebrides).
 Synonym Naeogeidae Kirkaldy, 1902, *Faun. Hawaii*, **3**, p. 168.

- Family **Leotichiidae** China, 1933, *Ann. Mag. nat. Hist.* (10) **12** : 185.
- Family **Leptopodidae** Costa, 1838, *Cimic. Regni. Neap. Cent.* 1, *Atti. real. Ist. incorragg. alle Sci. nat. Nap.* **7** : 151, 1847.
- Family **Saldidae** (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. xlix (Saldides).
- Synonym Saldidae Costa, 1852, *Cimic. Regni. Neap. Cent.* 3, *Atti. real. Ist. incorragg. alle Sci. nat. Nap.* **8** : 66, 1855.
- Synonym Acanthiidae Leach, 1815, *Brewster's Edinb. Encyc.* **9** : 123.
- Synonym Acanthiidae Fieber, 1860, *Europ. Hemipt.*, p. 24.
- Subfamily 1. Saldinae Van Duzee, 1917, *Cat. Hemipt. America north of Mexico*, p. 438.
- Subfamily 2. Saldoidinae Reuter, 1912, *Öfv. Finska Vet.-Soc. Förh.* **54A**, No. 12 : 23.
- Subfamily 3. Aepophilinae (Puton), 1879, *Synop. Hém. Het. France*, 2, p. 145 (Aepophilidae).
- Note.* Leston has recently, wrongly in our opinion, reduced the Aepophilinae to tribal rank under Saldinae (*Nature*, **178** : 427).
- Family **Notonectidae** Leach, 1815, *Brewster's Edinb. Encyc.* **9** : 124.
- Subfamily 1. Anisopinae Hutchinson, 1929, *Ann. S. Afr. Mus.* **25**, 3 : 362.
- Subfamily 2. Notonectinae Leach, 1815, *Brewster's Edinb. Encyc.* **9** : 124.
- Family **Pleidae** (Fieber), 1851, *Genera Hydroc.*, p. 27 (Pleae).
- Family **Helotrephidae** Esaki & China, 1927, *Trans. ent. Soc. Lond.* **1927** : 280.
- Subfamily 1. Neotrophinae China, 1940, *Ann. Mag. nat. Hist.* (11), **5** : 123.
- Subfamily 2. Idiocorinae Esaki & China, 1927, *Trans. ent. Soc. Lond.* **1927** : 280.
- Subfamily 3. Helotrephinae Esaki & China, 1927, *Trans. ent. Soc. Lond.* **1927** : 280.
- Family **Corixidae** Leach, 1815, *Brewster's Edinb. Encyc.* **9** : 124.
- Synonym Corixidae (Amyot & Serville), 1843, *Hist. nat. Hémipt.*, pp. li, 444 (Corisides).
- Subfamily 1. Miconectinae Jaczewski, 1924, *Ann. Zool. Mus. Polon. Hist. nat.* **3** : 3.
- Synonym Sigaridae Douglas & Scott, 1865, *Brit. Hemipt. Heteroptera*, p. 50.
- Note.* The genus *Sigara* F. on which Douglas & Scott's name is based belongs to the Corixinae.
- Subfamily 2. Diaprepocorinae Lundblad, 1928, *Entom. Tidsk.* **1** : 9.
- Subfamily 3. Corixinae (Douglas & Scott), 1865, *Brit. Hemipt. Heteroptera*, p. 50 (Corixidae).
- Subfamily 4. Stenocorixinae Hungerford, 1948, *Univ. Kansas Sci. Bull.* **32** : 43.
- Subfamily 5. Cymatiinae Walton, 1940, *Trans. Connect. Acad. Arts. Sci.* **33** : 344.
- Subfamily 6. Heterocorixinae Hungerford, 1948, *Univ. Kansas Sci. Bull.* **32** : 43.
- Family **Nepidae** (Latreille), 1802, *Hist. nat. Crust. Ins.* 3, p. 252 (Nepariae).
- Subfamily 1. Nepinae (Douglas & Scott), 1865, *Brit. Hemipt. Heteroptera*, p. 47 (Nepidae).
- Subfamily 2. Ranatrinae (Douglas & Scott), 1865, *Brit. Hemipt. Heteroptera*, p. 46 (Ranatridae).
- Family **Belostomatidae** (Leach), 1815, *Brewster's Edinb. Encyc.* **9** : 123 (Belostomida).

- Synonym Belostomidae Dohrn, 1859, *Cat. Hemipt.*, p. 54.
 Family **Naucoridae** Fallén, 1814, *Spec. Nov. Disp. Meth.*, pp. 3, 15.
 Subfamily 1. Naucorinae Stål, 1876, *Enum. Hemipt.* 5, p. 142.
 Subfamily 2. Limnocorinae Stål, 1876, *Enum. Hemipt.* 5, p. 142.
 Subfamily 3. Laccocorinae Stål, 1876, *Enum. Hemipt.* 5, p. 142.
 Subfamily 4. Cryphocricinae Montandon, 1897, *Verh. Zool. Bot. Ges. Wien*, 47 : 6.
 Subfamily 5. Ambrysinae Usinger, 1941, *Ann. ent. Soc. Amer.* 34 : 911.
 Subfamily 6. Cheirochelinae Montandon, 1897, *Ann. Mus. Civ. Genova*, 37 : 367.
 Subfamily 7. Potamocorinae Usinger, 1941, *Ann. ent. Soc. Amer.* 34 : 8 9.
 Subfamily 8. Aphelocheirinae (Fieber) 1860, *Europ. Hemipt.*, p. 23 (Aphelochirae).
 Synonym Aphelocheiridae auctt.
 Family **Gelastocoridae** Kirkaldy, 1897, *Entomologist*, 30 : 258.
 Synonym Galgulidae (Billberg), 1820, *Enum. Ins. Mus. Billb.*, p. 66 (Galgulides).
 Subfamily 1. Gelastocorinae Champion, 1901, *Biol. Centr. Amer. Rhynchota, Het.* 2, p. 437.
 Subfamily 2. Mononychinae (Fieber), 1851, *Genera Hydroc.*, pp. 9, 12 (Mononycoidea).
 Synonym Nerthrinae (Kirkaldy), 1906, *Trans. ent. Soc. Amer.* 32 : 149 (Nerthridae).
 Family **Ochteridae** Kirkaldy, 1906, *Trans. Amer. ent. Soc.* 32 : 149.
 Synonym Pelogoniidae (Leach), 1815, *Brewster's Edinb. Encyc.* 9 : 123 (Pelogonida).

Note. We have been advised that it is preferable to retain the name Ochteridae which has been in use for fifty-one years and to invoke the saving clause of current usage to prevent its being replaced by Pelogoniidae which is actually the older group name.

Ochterus Latr. 1807 has priority over *Pelagonus* Latr. 1809 which was an unnecessary new name for *Ochterus* Latr. nec. *Ochthera* Latr. 1802 Diptera.

KEY TO FAMILIES OF *Heteroptera*

- | | | |
|--|----------------------------------|----|
| 1. Abdominal trichobothria absent ¹ | | 2 |
| – Abdominal trichobothria present | | 39 |
| 2. Three pairs of trichobothria on head, (difficult to observe in some genera such as <i>Aepophilus</i> , <i>Hermatobates</i> et al.), rarely only 2 pairs (Limnobatodinae), or confused with bristles (Leptopodidae and Leotichiidae) | <i>Amphibicorisa</i> . | 3 |
| – No trichobothria on head, sometimes bristles present but no sensory setae | | 10 |
| 3. Claws terminal | | 4 |
| – Claws inserted before apex of tarsus (except Gerrid genus <i>Eotrechus</i>) | | 9 |
| 4. Trichobothria often indistinct hidden or confused with numerous spines or a dense pubescence | | 5 |

¹ Although the presence of regularly arranged trichobothria is fairly easy to observe, their absence is much less easy to ascertain. In very hairy species the trichobothria may be hidden or may be confused with ordinary hairs. In some genera of the trichophorous families they appear to be absent, e.g. *Oxycarenus*, *Lestonia*, *Aphylus*. In the Reduviid genus *Catamiarus* there appear to be numerous ventral trichobothrioid setae regularly arranged.

- Trichobothria distinct, head not spiny or densely pubescent. 6
- 5. Compound eyes on ventral surface of head directed downwards; second antennal segment thickened like first; pronotum with a distinct percurrent median carina; dorsal surface of head densely covered with short setae; basal segments of rostrum without spines or bristles.
A single genus of 2 species of Malayan cave-bugs living amongst bat guano
LEOTICHIIDAE China, 1933
- Compound eyes normal; second antennal segment much more slender than first; pronotum without a percurrent median carina; dorsal surface of head with numerous hairs or spines but not densely covered with short setae; basal segments of rostrum armed with spines or spine-like bristles directed laterally.
A small family of Old World cursorial, predaceous bugs, often spiny living in dry situations LEPTOPODIDAE Costa, 1838
- 6. Head long and narrow, as long or longer than the entire thorax; eyes placed near middle; antennae 4- or 5-segmented; metasternum with 1 or 2 omphalia; apterous forms common.
Usually slender, stick-like insects walking on surface of water near shore.
Rarely terrestrial; in damp moss (*Heterocleptes*) HYDROMETRIDAE (Billberg), 1820
- Head shorter, not exceeding the combined length of pronotum and scutellum 7
- 7. Bucculae forming a distinct longitudinal groove along entire underside of head; tarsi 2-segmented.
Very small, robust species; brachypterous forms occur. Rostrum apparently 3-segmented; antennae 4-5-segmented HEBRIDAE (Amyot & Serville), 1843
- Bucculae not forming such a groove 8
- 8. Eyes large with inner margins excavate; ocelli present, often contiguous; membrane of hemelytron with 4 rarely 5 parallel-sided closed cells; mandibular plates prominently convex, transverse and shining; scutellum large and triangular usually longer than broad; apterous forms unknown.
Fairly large family of small littoral, cursorial bugs running and jumping on mud and sand or amongst damp grass near water SALDIDAE (Amyot & Serville), 1843
- Eyes medium sized, inner margins not distinctly excavate; ocelli present, never contiguous; membrane of hemelytron never with 4 or 5 closed cells sometimes without cells or with membrane broken off or with membrane undifferentiated from corium (Macroveliinae); mandibular plates not as above; scutellum usually bilobed or if simple triangular (Mesoveloideinae), shorter than wide at base; apterous forms common.
Small family of relatively small species walking on floating vegetation MESOVELIIDAE Douglas & Scott, 1867
- 9. Legs inserted more or less equidistantly (except in Haloveliinae¹); vertex usually with a distinct, percurrent, median longitudinal suture or glabrous line, rarely obsolete in which case eyes small not extending backwards on to sides of pronotum; scent glands usually with paired lateral channels terminating above hind acetabula in a tuft of hairs; inner margin of eyes straight; male harpagones large and distinct.
Skating actively on surface of streams and ponds and, rarely, on surface of sea near shore VELIIDAE (Amyot & Serville), 1843
- Front legs widely separated from middle and hind pair. Vertex usually without a distinct percurrent median longitudinal suture or line, rarely present, in which case eyes large distinctly extending backwards on to sides of pronotum; scent glands medial (omphalium) usually without lateral channels (except in *Brachymetra cylindrostethus* et al.); inner margin of eyes usually sinuate; male harpagones rudimentary.

¹ See China, W. E., 1957, *J. Linn. Soc. London*, **43** (No. 291), p. 352.

- Skating on surface of all kinds of water including the sea and sometimes found in mid-ocean (*Halobates*) GERRIDAE Leach, 1815
10. Antennae strongly reduced, shorter than head, placed in grooves under the eyes or exceptionally, in the Aphelocheirine and Potamocorine Naucoridae and in the Ochteridae, very short, but visible from above *Hydrocorisa* 11
- Antennae much longer than head, always visible from above *Geocorisa* 19
11. Rostrum very short and broad, sunk into clypeus, not distinctly segmented; front tarsi modified into spatulate palae fringed with stiff bristles; base of head laminate, overlapping front of pronotum; neanides (larvae) with 3 dorsal abdominal scent gland openings; head as wide or wider than pronotum, hind tibiae flattened and fringed with swimming hairs; tarsi without claws.
- True water bugs with air bubble respiration CORIXIDAE Leach, 1815
- Rostrum cylindrical or cone-shaped, distinctly 3- or 4-segmented; front tarsi not as above; base of head inserted into pronotum; neanide without or with only 1 dorsal scent gland opening 12
12. Head fused with pronotum to form a cephalonotum; boundary between them indicated by a shallow dorsal, sinuate suture; antennae 1 or 2-segmented; ovipositor absent.
- True water bugs, usually strongly convex dorsally, hemelytral membrane strongly reduced HELOTREPHIDAE Esaki & China, 1927
- Head and pronotum not fused; sometimes partly so, but then suture deep and straight; antennae 3- or 4-segmented; ovipositor present 13
13. Abdomen with a pair of long, slender posterior appendages forming a respiratory siphon; hind coxae short, free, rotary; anterior legs raptorial; tarsi 1-segmented; ocelli absent; wings present, reticulately veined, but not functional.
- Water bugs living in vegetation close to the surface; respiration by siphon NEPIDAE (Latreille), 1802
- Abdomen without such appendages or if present very short and broadly flattened (Belostomatidae); hind coxae fixed, broadly joined to thoracic pleura 14
14. Ocelli absent, middle and hind legs with fringes of long swimming hairs; water bugs 15
- Ocelli present; middle and hind legs without fringes of long swimming hairs; shore bugs 17
15. Front legs modified for grasping prey with femur strongly thickened and anteriorly sulcate to form with the curved front tibia and tarsus a raptorial organ. Body broad and flattened 16
- Front legs simple, body strongly convex or tectiform 18
16. Outer margin of eyes continuous with lateral margin of dilated pronotum and front margin of head; membrane of hemelytron without veins; apex of abdomen without short strap-like appendages; middle and hind tibiae and tarsi cylindrical with rows of bristles and weak swimming hairs.
- Moderately sized rather flattened water bugs; neanides with a pair of widely separated abdominal scent gland openings NAUCORIDAE Fallén, 1814
- Eyes more or less prominent, not at all continuous with lateral margins of pronotum and head; membrane with reticulate veins; apex of abdomen with a pair of short strap-like appendages (respiratory siphon); median and posterior tibiae and tarsi flattened with strong fringes of swimming hairs.
- Large water bugs BELOSTOMATIDAE (Leach), 1815
17. Rostrum short not extending beyond anterior coxae; antennae invisible from above, carried in grooves beneath eyes; anterior legs raptorial, the femur very strong and broad with anterior surface either sulcate or flanged; head transverse, the subpedunculate eyes widely separated; scutellum irregularly tumid.
- Toad bugs living and burrowing in mud and sand on banks of lakes and rivers GELASTOCORIDAE Kirkaldy, 1897

- Rostrum long, extending at least to posterior coxae. Antennae visible from above; anterior legs simple, similar to posterior and median legs, cursorial; head with vertex little wider than diameter of one eye; eyes not subpendunculate; scutellum flattened not tumid OCHTERIDAE Kirk lady, 1906
18. Form elongate, wedge-shaped, abdomen without median ventral carina; antennae usually 4-segmented; posterior legs long oar-like without distinct claws; posterior tibiae flattened.
Medium sized. Back swimming water bugs more than 5 mm. long with air bubble respiration NOTONECTIDAE Leach, 1815
- Form oval, strongly convex; abdomen with distinct median ventral carina; antennae 3-segmented; posterior legs short, with 2 distinct claws; posterior tibiae cylindrical not flattened.
Small water bugs less than 5 mm. long PLEIDAE (Fieber), 1851
19. Rostrum strongly dorso-ventrally flattened throughout, very broad at base and tapering to apex; front tibia usually widening from base to apex, the single segmented tarsus inserted on the outer edge of the truncate apex; hemelytra uniformly membranous, the corium not differentiated; no stridulatory furrow, the rostrum apparently 4-segmented.
Small to very small gnat-like bugs with short robust legs, often found flying in swarms; neanides live in rotten wood ENICOCEPHALIDAE
- Rostrum not dorso-ventrally flattened throughout; front tibia and tarsus not as above; hemelytra rarely uniformly membranous in which case rostrum apparently 3-segmented, prosternal stridulatory furrow present or absent 20
20. Head with a dorsal transverse furrow or sulcus dividing it into two lobes, usually running between or just below the eyes; if obsolescent or indistinct (Triatominae and Sphaeridopinae) or completely absent (Visayanocorinae), then membrane of hemelytron with 2 large cells and at most one longitudinal vein extending from the apex of the posterior one 21
- Head without a dorsal transverse furrow or sulcus dividing it into two lobes; membrane of hemelytron seldom with two large cells in which case there are also several supernumary longitudinal veins extending from them towards the apical margin of the membrane 22
21. Membrane of hemelytron without cells but with 3 longitudinal veins; head and body extremely flattened both dorsally and ventrally; meso- and meta-sterna fused; thoracic scent glands present, hidden beneath the anterior border of the fused meso- and meta-sterna, submedially; legs multi-spinous.
Family based on a single genus from Brazil and Paraguay, inhabiting birds' nests and under bark *Elasmodemididae*
- Note. It is almost certain that the W. African genus *Heteropinus* Breddin belongs here.
- Membrane of hemelytron with 2 large cells, never with 3 free longitudinal veins; head and body rarely strongly flattened and meso- and meta-sterna fused (*Durganda*, *Staliastes*) in which case membrane with 2 large cells and scutellum apically acute or spined; thoracic scent-gland openings apparently absent but hidden in posterior acetabulae. A very large and variable family of predatory bugs of world-wide distribution *Reduviidae*
22. Prosternum with stridulatory furrow; front legs usually fully raptorial, the front tibia and tarsus being fused; fore femur usually very strongly thickened, the curved tibia-tarsus closing on its anterior edge in a pincer-like manner; sometimes the front femur extending beyond the insertion of the tibia-tarsus to form a crab-like pincer. In *Themonocoris* the front legs are not truly raptorial, the tibia and tarsus are not fused, the tarsus being 2 segmented (see subfamily key to Phymatidae). Abdomen usually strongly dilated below base. Medium to small sized bugs living on flowering plants and predators on bees and other insects visiting the flowers. *Phymatidae*

- Prosternum always without a stridulatory furrow; front legs not truly raptorial, the front tibia and tarsus not fused. 23
- 23. Basal rostral segment as wide as head at apex and apparently forming an apical lobe of the head from which it is delimited only by a suture so that the rostrum at first sight seems 3-segmented; basal two-thirds of labrum dorsal; bucculae absent; posterior lobe of pronotum very large and with a median longitudinal percurrent suture and lateral marginal carinae. Anterior femora very strongly incrassate. A very small family of predatory bugs formerly associated with the Nabidae and in many respects intermediate between the Nabidae and Reduviidae . . . PACHYNOMIDAE
- Basal rostral segment not as above, the labrum almost entirely ventral; bucculae present 24
- 24. Bucculae strongly elevated and extending the whole length of the underside of head, forming a sulcus for the basal visible segment of rostrum; sulcus closed anteriorly 25
- Bucculae not strongly elevated, not extending whole length of head; if forming a sulcus (some Aradidae) then this not closed anteriorly 26
- 25. Hemelytra densely reticulate or areolate; second antennal segment always shortest eyes always distinct; head usually, but not always, with several anteriorly directed spines; scutellum usually covered by pronotum, if visible, small and indistinct. Small delicate bugs living on shrubs and low plants . . . TINGIDAE (Laporte), 1832
- Hemelytra coriaceous, lightly punctate, coleopteroid, without membrane; second antennal segment longer than the first, eyes absent or obsolescent; head always without spines; scutellum small but distinct. Minute, subterranean, tropical American bugs . . . VIANIIDAE Kormilev, 1955
- 26. Eyes absent (inquilines or parasites) 27
- Eyes present 28
- 27. Completely apterous; scale-like; no ctenidia present; maxillary and mandibular stylets coiled in head capsule. Minute inquilines in termites' nests . . . TERMITAPHIDIDAE Myers, 1924
- Hemelytra rudimentary, ctenidia always present; viviparous parasites living in the fur of bats POLYCTENIDAE Westwood, 1874
- 28. Antennae strongly thickened; basal three segments equally thick and parallel sided (cylindrical); apical segment fusiform with apical region pubescent; hairs of body, short and strongly curved; antennophores very prominent, always visible from above; mandibular and maxillary setae very long and coiled inside head capsule; ocelli always absent, tarsi 2-segmented; veins of corium strongly elevated. Medium sized bugs, strongly flattened, living under bark and feeding on fungi. Often apterous ARADIDAE (Spinola), 1837
- Antennae if thickened, irregularly so, not parallel sided (cylindrical); apical segment if fusiform without the apical pubescent area, hairs of body never short and strongly curved; antennophores seldom prominent; mandibular and maxillary setae normal, not coiled in head capsule; ocelli present or absent, tarsi 2- or 3-segmented; veins of corium seldom strongly elevated 29
- 29. Pronotum with a median longitudinal carina. Small predatory insects living on shrubs in Egypt and Israel JOPPEICIDAE Reuter, 1910
- Pronotum without a median longitudinal carina 30
- 30. Rostrum apparently 3-segmented (or sometimes apparently 2-segmented) (basal segment very short and hidden) 31
- Rostrum apparently 4-segmented (basal segment longer and visible). Rarely 3-segmented (some Microphysidae-*Mallochiola*, *Chinaola* and *Plokiophila*), in which case male genitalia symmetrical 34
- 31. Ocelli absent; clypeus triangular, broadening apically to truncate apical margin, except in *Primicimex* in which case rostrum very short not reaching level of insertion of antennae; hemelytra always rudimentary; male genitalia asymmetrical; female with opening to Ribaga's organ on ventral or dorsal surface of abdomen.

- Small bloodsucking bugs living in the nests and lairs of birds and bats and in the houses of man CIMICIDAE (Latreille), 1804
- Ocelli usually present; clypeus parallel sided or narrowed to apex not broadened apically; hemelytra usually, developed, sometimes brachypterous (Anthocoridae). Ribaga's organ usually absent 32
32. Male genitalia symmetrical; rostrum with second visible segment (third actual) extremely long and slender; antennae slender throughout; hemelytra broad with costal margins strongly convex; cuneal fracture distinct but cuneus not otherwise well defined; membrane with numerous veins extending from basal cells; no apterous forms; tarsi 3-segmented. Small bugs running actively on ground.
- No real information as to ecology. Oriental species only. VELOCIPEDIDAE Bergroth, 1891
- Male genitalia strongly asymmetrical; antennae not slender throughout at least 2 basal segments thicker than third and fourth; hemelytra more or less parallel-sided; membrane with few or no veins 33
33. Hemelytra with cuneus distinctly defined; tarsi 3-segmented; corium and clavus not or only feebly punctate; eyes never pedunculate or stylate.
- A widely distributed family of small, blackish bugs living in flowers, litter and stored products. Many species are predaceous ANTHOCORIDAE (Amyot & Serville), 1843
- Hemelytra without a cuneus; tarsi 2-segmented; corium and clavus strongly punctate; eyes usually pedunculate or stylate.
- A small family of Lygaeid-like bugs restricted to Australia, S. India, Argentina and Antilles. Drake & Slater (1957) regard this family as related to the Cimicoidea THAUMASTOCORIDAE Kirkaldy; 1908
34. Male genitalia symmetrical 35
- Male genitalia asymmetrical 36
35. Tarsi 2-segmented; cuneal fracture present; eighth ventrite in female divided into 2 plates on each side of ovipositor when present; membrane with a single square cell at base between 2 longitudinal veins, rarely without such a cell (*Chinaola*) or without venation (*Plokiophila*).
- A very small family of minute predaceous bugs living on the bark of trees and shrubs, in moss and amongst lichens. The males are usually macropterous and the females brachypterous. Two tropical American genera, which Carayon regards as representing a new family, live in webs, *Plokiophila* in spiders' webs and *Embiophila* in Embiid webs MICROPHYSIDAE Dohrn, 1859
- Tarsi 3-segmented; no cuneal fracture, cuneus absent; eighth ventrite in female not divided into 2 plates on each side of ovipositor when the latter is present; membrane in macropterous forms with numerous short veins radiating to the margins from 3 or more large basal cells. No sexual dimorphism although brachypterous or apterous specimens common. Ocelli sometime absent in insular species.
- Medium sized predatory bugs living in low vegetation; some arboreal species NABIDAE Costa, 1852
36. Antennae with the 2 basal segments short and thickened, the 2 apical segments long and thin, covered with long erect hairs or setae; hemelytral membrane with variable venation but without an arcuate basal cell as below 37
- Antennae variable but never with the 2 apical segments long and thin and covered with long erect hairs; hemelytral venation consisting of a basal arcuate cell usually divided into 2 unequal cells by a longitudinal vein (except in Bryocorinae) rarely undivided or with secondary radial or reticulate veins, rarely without a basal cell (*Myrmecophyes*) in which case basal segment of rostrum long (4-segmented rostrum) 38
37. Head broad at apex, strongly deflexed; eyes large; hemelytron without a cuneal fracture.

Very small predatory bugs living in damp soil, moss or litter

SCHIZOPTERIDAE (Reuter), 1891

- Head more or less conical, porrect not deflexed; cuneal fracture present.

Small predatory bugs living in damp soil and under shingle along the shores of lakes and rivers

DIPSOCORIDAE Dohrn, 1859

38. Ocelli absent; tarsi usually 3-segmented, rarely 2-segmented (*Mevius*, *Vannius* and *Peritropis*) in which case the first tarsal segment is very long; head seldom very strongly deflexed (Cylapinae).

A very large and variable family of medium to small bugs usually phytophagous but frequently predaceous

MIRIDAE (Hahn), 1831

- Ocelli present, rarely absent; tarsi always 2-segmented, the first segment shorter than the second; head strongly deflexed almost perpendicularly to the body; vertex very short and usually narrow lying in the same plane as the body; ocelli usually almost contiguous; rarely vertex wider (*Isometopus*), and ocelli placed apart and close to eyes; second antennal segment always strongly modified either thickened or dilated or both.

A small family of small predatory bugs living on the bark of trees and shrubs. Carayon (1958) regards this family as only of subfamily rank within the Miridae.

ISOMETOPIDAE Fieber, 1860

39. Scutellum large, sometimes completely covering the abdomen and hemelytra; at least as long as clavus, if not (brachypterous forms), clavus corium and membrane fused; no claval commissure present (a very short one in Urostylidae); antennophores not or scarcely visible from above (except in Urostylidae) 40

- Scutellum smaller, shorter than clavus, a distinct claval commissure present; antennophores visible from above; antennae 4-segmented 46

40. Lateral margins of abdomen very strongly laminately expanded; antennae 3-segmented; body strongly flattened.

A small family of S. American bugs living on the bark of trees and shrubs

PHLOEIDAE (Amyot & Serville), 1843

- Lateral margins of abdomen not or only slightly laminately expanded; antennae usually 5-segmented, rarely 4-segmented (Tessarotominae and the Scutellerine genera *Fitha* and *Tetarthria*); body usually not excessively flattened 41

41. Pronotum with large backwardly produced lateral lobes; meso- and metanotum visible from the side beneath the base of hemelytron; trichobothria obsolescent; tarsi 3-segmented.

Small Australian bugs (living on eucalyptus?) APHYLIDAE (Bergroth), 1906

- Pronotum without large backwardly produced lateral lobes; meso- and metanotum not visible from side beneath base of hemelytron 42

42. Apices of median and posterior coxae with fringes of closely set stiff setae or pegs (*Strombosoma* and *Carrabas*); tibia usually multi-spinous.

Small to medium sized black or dull coloured, shining species often with a row of bristles along anterior margin of head; sometimes with anterior and posterior legs modified for digging. Usually feeding on the roots of plants

CYDNIDAE (Billberg), 1820

- Apices of median and posterior coxae without fringes of closely set stiff setae; tibiae not multispinous, at most with short stiff bristles or depressed hairs 43

43. Antennae inserted on lateral margin of head, antennophores cylindrical; ocelli more or less contiguous; claval commissure obsolescent.

Medium sized, rather delicate, phytophagous bugs of coreoid appearance; often found in swarms UROSTYLIDAE Dallas, 1851

- Antennae inserted below lateral margin of head; antennophores not cylindrical ocelli usually well separated; claval commissure absent. 44

44. Head, pronotum and part of costal margin of hemelytra strongly laminately expanded and recurved to produce a tortoise-like appearance; venter with a pair of

disk-shaped (sucking?) organs; tarsi 2-segmented.

Represented by a single Australian genus and species; small tortoise-like bug probably living on a smooth substrate such as Eucalyptus bark or leaves

LESTONIIDAE (China), 1955

- Head, pronotum and costal margin of hemelytra not strongly laminately expanded and recurved; not tortoise-like; venter without sucking organs 45
- 45. Hemelytra much longer than abdomen so that they are folded (elbowed) between membrane and corium in order to be hidden under scutellum; scutellum always more or less covering the abdomen; ventral abdominal segments with a straight, black, transverse sulcus on each side level with the trichobothria; sometimes (*Plastaspis*) abdominal ventrites fused laterally.

Small to moderately large bugs usually very convex and shining on upper side and flattened on ventral side, living on shrubs and low plants

PLATASPIDAE Dallas, 1851

- Hemelytra not or only slightly longer than abdomen, not folded (elbowed) between membrane and corium although at rest sometimes almost completely covered by the scutellum; scutellum often not covering the abdomen so that hemelytra are fully exposed; ventral abdominal segments without black transverse sulcus on each side; abdominal ventrites rarely fused laterally.

A very large family of phytophagous and predaceous bugs showing considerable variation in form

PENTATOMIDAE (Leach), 1815

- 46. Ocelli absent; membrane of hemelytron usually with 2 basal cells from which 7-8 branching, longitudinal veins extend to the apical margin 47
- Ocelli present at least in macropterous forms, rarely absent (*Camptocera* in the Lygaeidae) in which case clavus regularly punctate 48
- 47. Sixth visible (seventh actual) ventral abdominal segment in the female cleft in middle Medium to large brightly coloured, usually phytophagous bugs

LARGIDAE (Amyot & Serville), 1843

- Sixth visible ventral abdominal segment entire in both sexes. Medium sized bugs, brightly coloured, usually phytophagous, seed feeding species but rarely (*Dindymus*) predaceous
- 48. Antennophores dorsal placed relatively close together rarely lateral (*Agraphopus* and *Maccevetus*) in which case membrane of hemelytra with numerous longitudinal veins, basal cells usually absent, rarely reticulate (*Pseudophloeus*).

Medium to large phytophagous bugs sometimes with dilated antennae or posterior tibiae; posterior femora in male often strongly swollen and spined

COREIDAE Leach, 1815

- Antennophores placed further apart, more or less lateral and ventral of a line from centre of eyes to apex of head; membrane of hemelytra with not more than 6 veins 49
- 49. Female with the 2 dorsal abdominal segments anterior to the penultimate one, deeply arcuately incised; the apical segment deeply sinuate; membrane of hemelytron with 2 basal cells and several subreticulate veins; head seen from side with tylus strongly elevated.

Known only from a unique female specimen from S. Australia. Not seen by the present authors

HYOCEPHALIDAE Bergroth, 1906

- Female with abdomen not as above 50
- 50. Apices of slender femora clubbed; antennae geniculate, the apices of the slender basal and apical segments thickened; peritreme of thoracic scent gland openings laterally produced; body and legs slender.

A small family of phytophagous bugs BERYTIDAE Fieber, 1851

- Apices of femora not clubbed; antennae not geniculate 51
- 51. Antennae very long and slender; scutellum spined.

A small family of medium sized phytophagous bugs with narrow elongate bodies and broad heads

COLOBATHRISTIDAE (Stål), 1866

- Antennae robust not exceptionally long ; scutellum not spined 52
- 52. Corium, clavus and base of membrane areolate, tarsi 2-segmented ; membrane in macropterous forms, with 4 straight veins.
A very small family of small phytophagous bugs
PIESMATIDAE (Amyot & Serville), 1843
- Corium and clavus regularly punctate but not areolate ; tarsi 3-segmented ; membrane of hemelytron with 5 or 6 sinuate veins 53
- 53. Jugal acuminate and contiguous at base in front of tylus ; basal antennal segment strongly thickened and much thicker than remaining segments, densely, setosely pubescent.
A small family of medium sized bugs formerly placed in the Coreid tribe Stenocephalini and related to the Lygaeidae STENOCEPHALIDAE Dallas, 1852
- Jugal rarely acuminate and extending in front of tylus, if so, never contiguous at base in front of tylus ; basal antennal segment not greatly thicker than remaining segments, pubescence sparse and non-bristly.
A large family of small to medium bugs mainly dull in colour but with one subfamily (Lygaeinae) brightly coloured LYGAEIDAE (Schilling), 1829

Keys are given below of the subfamilies where such exist. Many families have not, so far, been subdivided.

KEY TO SUBFAMILIES OF HYDROMETRIDAE

- 1. Antennae 5-segmented ; metasternum with 1 or 2 omphalia ; size small 3-5 mm. 2
- Antennae 4-segmented ; metasternum without omphalia ; size 6 mm. or more
HYDROMETRINAE Esaki, 1927
- 2. Head broadly constricted behind the eyes, with 2 black ocellar spots ; the hind lobe with posterior pair of trichobothrial setae inserted on prominent rounded elevations ; anterior lobe of head with 2 pairs of erect, stiff bristles ; metasternum with 2 separate omphalia on posterior margin, front wings with 3 closed cells.
Terrestrial species HETEROCLEPTINAE Villiers, 1948
(= HYDROBATODINAE China & Usinger, 1949)
- Head subcylindrical behind eyes, without ocellar spots, posterior pair of trichobothrial setae inserted on small tubercles at extreme base of head ; only 1 pair of erect stiff bristles in front of eyes ; metasternum with a median single omphalium on posterior margin, front wings with 2 closed cells LIMNOBATODINAE Esaki, 1927

KEY TO SUBFAMILIES OF MESOVELIIDAE¹

- 1. Head elongate slightly declivous towards apex ; antennae inserted well in front of anterior margin of eyes ; posterior margin of eyes not contiguous with anterior margin of pronotum
Scutellum not simple and triangular 2
- Head short, strongly declivous ; antennae inserted close to anterior margin of eyes ; posterior margin of eyes contiguous with anterior margin of pronotum ; scutellum simple, triangular rather shorter than broad at base.
S. American species MESOVELOIDEINAE subfam. nov.
(Usinger in press)
- 2. Pronotum (macropterous form) extending posteriorly to cover scutellum which is apparently absent (as in Veliidae) ; hemelytra with the corium not differentiated from the membrane, the whole with 6 closed cells ; apterous form unknown.

¹ Prof. R. L. Usinger has advised us that the structure of the neanides in these three groups is so similar that they should all be regarded as subfamilies of Mesoveliidae.

Terrestrial species in moss on bark of trees near water ; restricted to California

MACROVELIINAE McKinstry, 1942

- Pronotum (macropterous form) not as above ; scutellum distinctly visible (macropterous forms) consisting of 2 lobes, the basal one convex the apical one spatulate ; membrane of hemelytron without cells, often completely broken off leaving only a narrow corium ; ocelli present in macropterous form, obsolescent or absent in apterous form which is common.

Small but world-wide subfamily of small surface bugs living on floating vegetation MESOVELIINAE Douglas & Scott, 1867

KEY TO SUBFAMILIES OF VELIIDAE

1. Tarsal formula 2 : 3 : 3, the basal segments of tarsi of anterior and posterior legs very short, and inconspicuous ; of median legs long, subequal to apical segments ; hemelytra divided by a straight line into corium and membrane ; the corium with 2 closed cells ; membrane broad and long without veins
PERITTOPINAE China & Usinger, 1949
- Tarsi not as above ; hemelytra not divided into distinct corium and membrane, with 4-5 closed cells 2
2. Median tarsi deeply cleft, with laminate claws and plumose hairs arising from base of cleft RHAGOVELIINAE China & Usinger, 1949
- Median tarsi not deeply cleft, without plumose hairs arising from base of cleft 3
3. Tarsal formula¹ 1 : 2 : 2 4
- Tarsal formula 2 : 2 : 2 or 3 : 3 : 3 5
4. Claws all terminal ; hemelytra with 5 closed cells, the extra cell located along costal margin HEBROVELIINAE Lundblad, 1939
- Claws preapical ; hemelytra with 4 closed cells
MICROVELIINAE China & Usinger, 1949
5. Tarsal formula 2 : 2 : 2 : 2 : very small 1.5-2.5 mm. ; suboval usually apterous, macropterous forms unknown.
Marine bugs along coral shores, Indian and Pacific Oceans HALOVELIINAE Esaki, 1930
(Haloveliidae Poisson, 1956)
- Tarsal formula 3 : 3 : 3, basal segment usually short ; larger 4-10 mm. elongate usually macropterous ; mesonotum largely concealed by pronotum in macropterous forms VELIINAE China & Usinger, 1949

KEY TO THE SUBFAMILIES OF SALDIDAE

1. Scutellum transverse, much broader than long, narrowly arcuate ; eyes small, inner margins entire ; ocelli absent ; hemelytra always abbreviated, the apical margins concave with the outer angle produced ; pronotum quadrate.
In rock crevices and under sea-weed in lowtide zone of rocky seashore. S.W. Europe AEOPHILINAE² (Puton), 1879
- Scutellum large triangular at least as long as broad, rarely (*Omania*) broader than long but never narrowly arcuate. Eyes large, usually with inner margin sinuate ; ocelli always present, often placed close together ; hemelytra never abbreviated with apical margin concave ; pronotum more or less trapezoidal 2
2. Pronotum with two erect conical tubercles or spinous processes ; head and pronotum narrow, inner margins of eyes parallel, not emarginate.
A small subfamily of very small Saldids distributed in Florida, Formosa and Philippines SALDOIDINAE Reuter, 1912

¹ Tarsal formula is number of tarsal segments of anterior, median and posterior legs placed in that order.

² Obviously evolved from Saldidae (see China, 1927, *Ent. mon. Mag.* **63** : 238-241) but we do not agree with Leston that this group, hitherto regarded as a distinct family, should be sunk as a tribe of Saldinae.

- Pronotum without tubercles or spinous processes; head wider, pronotum trapezoidal; inner margins of eyes usually emarginate.
A large subfamily of small to medium sized littoral bugs of world-wide distribution
SALDINAE Van Duzee, 1917

KEY TO SUBFAMILIES OF GERRIDAE

1. Abdomen elongate, more than twice as long as broad at base; internal margin of eyes concavely emarginate 2
- Abdomen very short, often shorter than wide at base, never more than twice as long as broad at base; internal margin of eyes not concavely emarginate 3
2. Median and posterior legs with tibiae and tarsi very long and slender tapering to apex, thread-like, the tarsi 1-segmented and very short; median tibiae in male with a fringe of long thin hairs.
Medium to large water skaters living on surface of running water
PTILOMERINAE Esaki, 1927
- Median and posterior legs with tibiae and tarsi only moderately slender, not tapering to apex nor thread-like, the tarsi long, 2-segmented with the basal segment much longer than the apical segment.
Medium to large water skaters living on both stagnant and running water
GERRINAE Bianchi, 1896
3. Apical abdominal segments cylindrical, elongate; head produced in front of eyes so that it is about as long as broad between eyes, sides more or less parallel in front of eyes.
Small water skaters often with curiously modified antennae and legs
RHAGADOTARSINAE Lundblad, 1933
- Apical abdominal segments not cylindrical or elongate, usually strongly transverse and retracted; head transverse, triangular, not strongly produced in front of eyes, sides strongly convergent to apex 4
4. Abdomen hardly extending beyond the apices of the posterior coxae, the segments fused and indicated only by the presence of spiracles at sides; male genital segment folded ventrally to lie with its apex directed towards the head.
Minute marine bugs with relatively short robust legs living on isolated coral reefs in the Pacific and Indian Oceans HERMATOBATINAE Coutière et Martin, 1901
- Abdomen usually extending distinctly beyond the apices of posterior coxae, the segments not fused and the male genital segments backwardly porrect, not folded ventrally with apex pointing towards head.
Small to medium sized water skaters some genera of which (*Halobates*) are fully marine HALOBATINAE Bianchi, 1896

KEY TO SUBFAMILIES OF CORIXIDAE

1. Scutellum exposed, covered by pronotum only at anterior margin 2
- Scutellum covered by pronotum rarely with apex visible 3
2. Ocelli present; antennae 4-segmented; anterior tarsal claw large.
Small Australasian water bugs probably living in temporary pools of water judging by the presence of ocelli DIAPREOCORINAE Lundblad, 1928
- Ocelli absent; antennae 3-segmented; anterior tarsal claw in ♀ spine-like, in ♂ flattened and capable of being folded back into an excavation on the outside of the tarsus.
Small shallow-water bugs of world-wide distribution
MICRONECTINAE Jaczewski, 1924
3. Hemelytra with an embolar groove along costal margin 4
- Hemelytra without an embolar groove. Long narrow corixids living in River Nile and its tributaries in Sudan STENOCORIXINAE Hungerford, 1948

4. Rostrum with transverse sulcations; nodal suture, towards apex of embolium, present 5
- Rostrum without transverse sulcations; nodal suture absent.
Small corixids inhabiting ponds and swamps . . . CYMATIINAE Walton, 1940
5. Infra-ocular part of the genae very broad; lower margin of eye concave; hypo-ocular suture arising near the subacute production of the inferior angle of the eye.
Small tropical-American corixids . . . HETEROCORIXINAE Hungerford, 1948
- Infra-ocular part of the genae usually not broad, if so the hypo-ocular suture, if present, arising about midway along ventral margin of eye.
Small to medium sized corixids of world-wide distribution and living in ponds, lakes and rivers . . . CORIXINAE Douglas & Scott, 1865

KEY TO SUBFAMILIES OF HELOTREPHIDAE

1. Adult tarsal segmentation 3-3-3; dorsal surface of head separated from ventral surface by a distinct but fine carina, scutellum much broader at base than long in middle; female with subovipositor.
Small water bugs living in pot holes in mountain streams in S. America
NEOTREPHINAE China, 1940
- Adult tarsal segmentation 1-1-2; dorsal surface of head not separated from ventral surface by a distinct carina (if so scutellum much longer than broad), scutellum at least as long as broad; female without an ovipositor . . . 2
2. Body flattened; suture between head and pronotum absent; antennae, 1-segmented (plate-like).
Minute water bugs from Lake Tanganyika in E. Africa IDIOCORINAE Esaki & China, 1927
- Body strongly convex; suture between head and pronotum distinct; antennae 2-segmented.
Small semi-globular water bugs living in still water and lakes in the Oriental and Ethiopian Regions . . . HELOTREPHINAE Esaki & China, 1927

KEY TO SUBFAMILIES OF NEPIDAE

1. Head across eyes distinctly narrower than the anterior margin of pronotum; pronotum broad trapezoidal; anterior coxae short; anterior femora strongly thickened.
Medium to large water bugs usually living on the bottom of shallow water along the margins of ponds and streams . . . NEPINAE Douglas & Scott, 1865
- Head across eyes distinctly broader than the anterior margin of pronotum; pronotum elongate, cylindrical, widened posteriorly; anterior coxae long and slender; anterior femora not strongly thickened.
Medium to large water bugs living amongst water plants in deeper water of ponds and lakes . . . RANATRINAE Douglas & Scott, 1865

KEY TO SUBFAMILIES OF NAUCORIDAE

1. Head narrow, elongate produced in front of eyes; rostrum slender and at least as long as front femora; antennae extending beyond side margins of head and hence visible from above; the anterior tarsi mobile and with 2 well developed claws . . . 2
- Head broad transverse, not or very slightly produced in front of eyes; rostrum very broad at base tapering towards apex; much shorter than anterior femora; antennae short completely concealed below margins of head; anterior tarsi more or less fused to tibiae (connate) and immobile, usually with 1 or 2 small claws . . . 3
2. Rostrum very long, reaching at least the median coxae, apical segment much shorter than the penultimate segment; anterior tarsi with 3 segments the basal segment very small and obscure; spiracles visible but apparently closed and surrounded by a rosette of radiating branches; male genitalia asymmetrical; medium sized water bugs usually brachypterous, (the macropterous forms rare), living

on the bed of swift flowing rivers, their plastron respiration enabling them to stay submerged throughout their life.

Distribution throughout the Old World . . . APHELOCHEIRINAE Fieber, 1860

- Rostrum short, reaching the anterior coxae only, last 2 segments subequal in length; anterior tarsi with 1-segment only; spiracles obsolete; male genitalia symmetrical.

Minute water bugs living in S. American rivers; so far only macropterous forms are known although in the genus *Coleopteroides* the hemelytra are without a membrane . . . POTAMOCORINAE Usinger, 1941

- 3. Anterior margin of pronotum deeply emarginate, head strongly inserted . . . 4
- Anterior margin of pronotum straight or feebly emarginate, head not strongly inserted . . . 6
- 4. Rostrum arising from a deep excavation on under side of head far from its anterior margin; head convexly and laminately produced in front of eyes; labrum usually much reduced.

Medium sized water bugs of Oriental distribution

CHEIROCHELINAE Montandon, 1897

- Rostrum arising from anterior margin of head; labrum distinct and well developed . . . 5
- 5. Propleura produced laminately over posterior region of prosternum, contiguous medially and completely covering this area of the prosternum; ventral surface of abdomen densely pubescent, the circumspiracular areas glabrous and a transverse row of small glabrous areas behind each spiracle; always macropterous.

Medium sized species, distributed in the Neotropical and Nearctic Regions

AMBRYINAE Usinger, 1941

- Prosternum completely exposed, separated from the flattened pleura by simple sutures and not at all produced medially; venter of abdomen without pubescence with a perforated disk-like area near each spiracle; strongly dimorphic; brachypterous form most common and elongate oval in form.

Medium sized species inhabiting waterfalls in the Neotropical and Mexican Regions . . . CRYPHOCRINAE Montandon, 1897

- 6. Anterior tarsi with 2 segments, with 2 claws which are often inconspicuous, anterior margin of head strongly turned downwards and backwards, the rostrum thus arising well behind the anterior margin of the head; gular region very short; median and posterior femora each with 2 longitudinal rows of conspicuous bristles on lower surface in addition to the 2 usual rows of short bristles along the inner (posterior) surface.

Medium sized Naucorids occurring in a wide variety of aquatic habitats and widely distributed in both Old World and New World tropical regions

LACCOCORINAE Stål, 1876

- Anterior tarsi with 1 segment, with or without a minute scarcely distinguishable claw; anterior margin of head usually less strongly backwardly declivous; gular region moderately long, median and posterior femora without distinct additional rows of bristles . . . 7
- 7. Inner margin of eyes anteriorly divergent; meso- and metasterna with prominent longitudinal carinae which are broad and foveate or otherwise excavate along middle; body broadly oval and subflattened.

Medium sized Neotropical Naucorids . . . LIMNOCORINAE Stål, 1876

- Inner margins of eyes anteriorly convergent; meso- and metasterna at most with small thin plate-like carinae, these sometimes absent; body strongly convex; robust species.

Medium sized Naucoridae of cosmopolitan distribution . . . NAUCORINAE Stål, 1876

KEY TO SUBFAMILIES OF GELASTOCORIDAE

- 1. Pronotum with lateral margins subparallel, feebly convex, anterior margin behind vertex straight; head partly sunk beneath anterior margin of pronotum, eyes

prominent but not pedunculate ; anterior tarsus and claw fused to form a single claw.

Medium sized shore bugs living in muddy situations sometimes a long way from water. Distribution world-wide in tropical and subtropical regions

MONONYCHINAE Fieber, 1851

- Pronotum with lateral margins strongly sinuate the widest part about the middle, anterior margin also sinuate ; head not sunk beneath anterior margin of pronotum, eyes extremely prominent and raised, pedunculate ; anterior tarsus with 2 distinct claws.

Medium sized shore bugs (toad bugs) inhabiting sandy and muddy shores of ponds and streams in the Neotropical Region only . GELASTOCORINAE Champion, 1901

KEY TO SUBFAMILIES OF NOTONECTIDAE

1. Hemelytral commissure without a pit (sensory organ) at anterior end ; median femur with a subapical spur on its posterior margin ; antennae with 4 well defined segments ; male genitalia symmetrical.
Cosmopolitan water bugs (back swimmers) NOTONECTINAE Leach, 1815
- Hemelytral commissure with a pit. Median femur without a subapical spur ; antenna with 3 well defined segments.
Tropical and subtropical water bugs (back swimmers) ANISOPINAE Hutchinson, 1929

KEY TO THE SUBFAMILIES OF REDUVIIDAE¹

1. Anterior coxae elongate at least 4 times as long as wide ; front legs often raptorial 2
- Anterior coxae not elongate seldom more than twice as long as wide (*Evonymus*) in which case front tibiae with an apical spur and process of trochanter blunt not spine-like and ocelli placed close together ; front legs never truly raptorial 5
2. Anterior coxal cavities opening straight downward ; underside of head with downwardly projecting spines and rostrum with upwardly projecting spines or bristles 3
- Anterior coxal cavities opening forward and downward ; head and rostrum without such spines and bristles 4
3. Head with a distinct transverse furrow ; pronotum usually spined ; body not highly polished. Small to medium sized species of world-wide distribution. Biology unknown but nocturnal in habit SAICINAE (Stål), 1859
- Head without a transverse furrow ; pronotum without spines ; head and body highly polished ; legs relatively long and slender. Only a single genus of small dark coloured, shining species probably inhabiting the forest canopy in Ethiopian and Oriental regions VISAYANOCORINAE² Miller, 1952
4. Ocelli absent ; the lower anterior border of prothorax, seen in side view, scarcely produced beyond upper margin on which head is inserted. Large group of small to fairly large, fragile but predatory species, sometimes bacilliform, sometimes gnat-like ; distribution world wide ; sometimes found in caves and associated with spider webs. Probably prey on Diptera EMESINAE (Amyot & Serville), 1843
- Ocelli present ; the lower anterior border of the prothorax produced distinctly beyond the upper border in the middle of which the head is inserted. Small group of genera allied to Emesinae but no ecological data available ; distribution Neotropical BACTRODINAE (Stål), 1866
5. Rostrum with 4 visible segments, the basal segment distinct. A small family of robust, spiny bugs of Oriental and Malayan distribution

CENTROCNEMINAE Miller, 1956

¹ Carayon, Usinger and Wygodzinsky (1958, q.v.) do not accept all these subfamilies and would relegate some of them to tribal status.

² Although we agree with Villiers (1958) that *Visayanocoris* Miller 1952 is a synonym of *Carayonia* Villiers 1951, we are not convinced that it belongs to the Saicinae and therefore Miller's subfamily name is retained.

- Rostrum apparently 3 segmented, the basal segment not distinctly visible 6
- 6. Anterior tarsi strongly reduced, either minute or obsolete, rarely robust and distinct (Ectinoderinae) in which case the anterior claws are minute and parallel; the front tibiae are usually distinctly longer than the femora; anterior tibiae often clothed with dense erect pubescence 7
- Anterior tarsi not strongly reduced, never obsolete; anterior claws seldom minute and parallel; front femora seldom longer than tibiae; anterior tibiae not as above 9
- 7. Pronotum strongly backwardly produced to cover all or most of the scutellum; prosternal stridulatory furrow absent; anterior tarsus usually 1-segmented. 8
- Pronotum not backwardly produced, scutellum entirely visible; prosternal stridulatory furrow present. Anterior tibiae with a dorsal sulcus apically in which the 2- or 3-segmented tarsus is carried at rest: head and body and legs somewhat densely setose; females sometimes with a coloured foliaceous process on each side of the eighth dorsal abdominal segment; stridulatory furrow present.
- A small group of genera of Neotropical distribution allied to the next two subfamilies but less specialized. Habitat: foliage and flowers associated with forest clearings APIOMERINAE (Amyot & Serville) 1843
- Note.* Some species use resin on the front legs to capture prey and this is the most primitive of the two groups in which this curious habit appears to have started.
- 8. Scutellum entirely invisible, the posterior margin of the pronotum entire; pronotum not flattened; anterior tarsus probably 1-segmented but usually missing in museum specimens; apex of front tibiae curved downwards.
- A very small group of medium to small sized species from Central Africa and Madagascar, living under bark and amongst leaf debris . . . DIASPIDIINAE Miller, 1959
- Scutellum not entirely invisible, its apex visible beyond the medially excavate posterior margin of the pronotum; pronotum strongly flattened; the small anterior tarsi one-segmented. A small group of moderately large to medium sized species of Oriental distribution found on the trunks of jungle trees which exude resin.
- Note.* The bugs dip their front legs into the sticky resin and use them to catch small bees, etc. Resin is often found on the front legs of museum specimens
- ECTINODERINAE (Stål), 1866
- 9. Anterior tarsus with 2 segments; underside of head not spinous 10
- Anterior tarsus with 3 segments, rarely with basal segment very short and apparently 2 segmented (Rhaphidosominae); rarely 2-segmented (*Nalata*, *Stachyogenus* and *Microlestria*, in which case underside of head armed with spinous tubercles 14
- 10. Scutellum triangular; if not then armed with a long erect spine 11
- Scutellum semi-circular, unspined posterior margin sometimes fringed; antennae, legs and abdomen with abundant serrate or plumose setae; trichome usually present on basal ventral abdominal segments; hemelytra with membrane ample; hind wings reduced. A small group of small to moderate sized bugs often found in association with ants on which they prey and which they are said to anaesthetize with the trichome HOLOPTILINAE (Amyot & Serville), 1843
- 11. Undersurface of head with a distinct buccal groove; antenna with first segment strongly thickened, the remaining segments also distinctly thickened with the apical segment very short; tarsi very short; distinctly Aradid-like in general appearance, not Reduviid-like 12
- Undersurface of head without a distinct buccal groove; antennae not as above; not Aradid-like except *Aradomorpha* (Reduviinae), see note below 13
- 12. Hind wing cell without hamus; dorsal surface of abdomen with only one pair of scent gland openings; head anteriorly without an interantennal process at apex. A small group, of doubtful Reduviid affinity, based on a single genus of neotropical distribution PHIMOPHORINAE (Handlirsch), 1897

Note. *Phimophorus* was associated by Handlirsch (1897) with the Stenopodinae, by Wygodzinsky (1948) with the Phymatidae and the genus *Aradomorpha* (Reduviinae). In spite of the absence of a buccal groove *Aradomorpha* with its 2-segmented tarsi might be placed in the Phimophorinae which might better be regarded as a distinct family.

- Hind wing cell with a long hamus ; dorsal surface of abdomen with three pairs of scent gland openings ; head anteriorly with an apically falcate inter-antennal process.

Based on a single genus and species from the Solomon Islands. Superficially closely allied to Phimophorinae (see above) . . . MEDANOCORINAE Miller, 1956

13. *Fossula spongiosa* indistinct, apparently absent from apex of anterior tibia ; whole insect smooth and shining with numerous long erect setae, particularly long and dense on hind tibiae which are themselves very long and curved ; anterior tibiae swollen and compressed laterally on apical half with the tarsi very long ; erect scutellar spine very long ; humeral angles of pronotum hemispherically rounded ; posterior lateral angles of connexivum not dentate.

Very small delicate insects, allied to the Salyavatinae, of which only a single specimen, from Borneo, is known . . . MANANGOCORINAE Miller, 1954

- *Fossula spongiosa* always present at apex of anterior tibia usually very distinct ; whole insect dull mat, not shining, not strikingly setose ; hind tibiae straight of normal length ; anterior tibiae often widely dilated even to base, the tarsus usually short, sometimes folded back into a groove at the dorsal apex of the tibia ; humeral angles of pronotum usually acute or spined ; posterior lateral angles of connexivum usually acute or dentate . . . SALYAVATINAE (Amyot & Serville), 1843

14. Hemelytral membrane very broad combined with a narrow and elongate corium ; head usually acuminate ; eyes not at all prominent, definitely flattened so that they do not project laterally beyond the lateral margins of the postocular region of the head, sometimes almost contiguous dorsally ; antennophores placed immediately in front of the eyes and always obliquely divergent anteriorly, rarely laminate (*Afrodecius*) in which case the second visible rostral segment is thickened and its inner posterior apical margin produced into a small sub-acute process parallel with the short apical segment, giving a pincer-like appearance ; first antennal segment both thickened and much longer than the head ; ocelli absent ; head, body and veins of corium often very densely tomentose so that actually surface is invisible.

A small group of medium sized bugs, dull coloured, nocturnal species living among leaf debris and in crevices. Oriental, Australasian and Ethiopian Regions

TRIBELOCEPHALINAE (Stål), 1866

- Hemelytral membrane not very broad combined with a narrow and elongate corium ; eyes not flattened, usually distinctly prominent beyond lateral margins of postocular region of head, never almost contiguous dorsally ; antennophores never obliquely divergent anteriorly nor laminate ; first antennal segment often longer than head but never strongly thickened as well ; head body and veins of corium sometimes tomentose but never so densely that surface is invisible. . . . 15

15. Scutellum triangular, apex sometimes bifid (*Hammacerinae*) 16

- Scutellum not triangular, apically truncate and mucronate, that is with two or three curved prongs.

A large group of small to medium, often shining, brightly coloured species.

Habitat amongst vegetable debris under stones and logs ; mainly nocturnal.

World wide distribution in tropical and subtropical regions

ECTRICHODIINAE (Amyot & Serville), 1843

16. Ocelli absent ; hemelytra present 17

- Ocelli present, absent only in apterous specimens 18

17. Head with the postocular region much longer than the anteocular region, the latter ending apically in a stout spine-like process ; pronotum constricted behind the middle ; anterior femora strongly swollen ; tarsi long and slender ; insect not bristly.

A small group of Neotropical and Ethiopian distribution of which probably only *Vescia* and *Chopardita* are typical (see China and Usinger 1949)

VESCIINAE Fracker & Bruner, 1924

- Head with the postocular region not longer than the anteocular region, the latter not ending in a spine like process; pronotum constricted at or near middle; anterior femora not especially swollen; insect covered with bristle-like hairs.

A very small family of two genera, *Chryxus* and *Lentia* of neotropical distribution

CHRYXINAE Champion, 1898

- 18. Second antennal segment multi-pseudosegmented (8–28). A small family of moderately large, apparently subcorticolous species of Neotropical distribution HAMMACERINAE

- Second antennal segment not multi-segmented 19

- 19. Head with an apically truncate process between the antennae; the eyes pedunculate; auxilliary postero-lateral, metathoracic scent glands (Brindley's glands) present.

A small group of Cicindelid-like reduviids living mostly under logs and stones.

Distribution Ethiopian and Neotropical Regions . . . CETHERINAE Jeannel, 1919

- Head without such a process; the eyes not pedunculate; Brindley's glands absent 20

- 20. Head with the transverse sulcus between or behind the eyes absent or obsolescent; anterior and posterior lobes of pronotum indistinctly separated, the former much shorter than the latter 21

- Head with the transverse sulcus between or behind the eyes present and usually distinct; rarely (some Physoderinae) very wide and shallow or rather indistinct (Piratinae) 22

- 21. Head not extending beyond eyes, strongly deflexed anteriorly; antennae inserted close together between the eyes which are very large and sub-spherical; ocelli placed close together on a strongly elevated protuberance; rostrum short and straight relatively slender with second visible segment very long, lying between the almost contiguous eyes.

A very small group of superficially *Triatoma*-like bugs of Neotropical distribution.

Biology unknown SPHAERIDOPINAE (Amyot & Serville), 1843

- Head extending well beyond eyes, not deflexed anteriorly; antennae inserted on the sides of the anteocular region of the head in front of middle of anterior margin of eyes; ocelli not placed close together on a protuberance; rostrum long and straight not particularly slender, first visible segment much longer than in Sphaeridopinae; eyes not nearly contiguous on underside of head. The prosternal stridulatory furrow is absent in *Linshcosteus* Dist. Moderately large insects associated with mammals and birds whose blood they suck. Some species are vectors of *Trypanosoma cruzi*, Mostly neotropical or subtropical but one species is tropicopolitan TRIATOMINAE Jeannel, 1919

- 22. Hemelytra with cubital nerve branching to form an additional 4 to 6-angled cell between corium and membrane 23

- Hemelytra with cubitus simple not forming such a cell, cubitus sometimes obsolete . 28

- 23. Cubital cell usually hexagonal, first antennal segment stout, porrect; abdomen with only two dorsal scent glands; claws simple. A fairly large group of rather elongate rather pallid reduviids inhabiting secluded spots in all the Zoogeographical Regions STENOPODINAE (Amyot & Serville), 1843

- Cubital cell usually quadrangular, sometimes very small; first antennal segment usually relatively slender; abdomen with three dorsal scent glands; claws dentate or appendiculate 24

- 24. Rostrum slender and straight, rarely slightly curved at base, either cylindrical, of equal thickness throughout, or swollen at base and tapering gradually to a long fine point; usually extending to the anterior coxae but sometimes (*Phonolibes*) extending almost to the base of abdomen 25

- Rostrum not slender and straight, usually distinctly curved from base to apex and strongly curved at base.

A large group of variable reduviids living on flowering plants, grasses and shrubs in all the Zoogeographical Regions . . . HARPACTORINAE (Amyot & Serville), 1843

25. Narrow elongate, often bacilliform species with the transverse head sulcus running between the very small eyes ; usually apterous with long slender legs and short, curved, apparently 2-segmented tarsi ; if not apterous then ocelli situated very close to eyes and far from base of head.

A small group of Old World reduviids living mainly in grasses and low herbage

RHAPHIDOSOMINAE Jeannel, 1919

- Not elongate or bacilliform ; transverse head sulcus behind the eyes which are not very small ; macropterous species, the legs seldom exceptionally long and slender 26
26. Head anteriorly acuminate, elongated in front of antennophores so that the subspherical basal lobe bearing the ocelli is very much shorter than the region in front of the eyes ; eyes relatively small ; pronotum smooth with a median longitudinal sulcus ; body tomentose. A small group of Old World species living mainly under logs and stones ; sometimes found in termites' nests

PHONOLIBINAE Miller, 1952

- Head not as above, basal lobe bearing ocelli not subspherical and not much shorter than the antioocular region ; eyes relatively large 27
27. Pronotum shining with two percurrent, sinuate, dorso-lateral carinae ; pronotum posteriorly without a flat tongue-like process on each side of scutellum ; hind femora nodular with dense short, erect, glandular setae ; scutellum with a sub-erect thickened process or knob.

A very small group of medium sized species usually with abundant secretory hairs or setae. Habitat jungle trees and foliage in the Oriental and Australasian Regions ; also recorded as predators of termites TEGEINAE (Villiers), 1948

- Pronotum dull without percurrent carinae ; pronotum posteriorly with a flat, tongue-like process projecting posteriorly on each side of scutellum ; the scutellum with an apical, spatulate process ; anterior lobe of pronotum usually broader than posterior lobe, the anterior lateral margins broadly rounded ; sometimes with the posterior lobe widest in which case the transverse furrow behind the eyes is very broad and shallow and consequently indistinct ; legs short and thick, femora tuberculate. A small group of reduviids found mainly in rotting vegetable debris and predators on beetles in the Oriental and Mascarene Regions

PHYSODERINAE Miller, 1954

28. Pronotum constricted well behind the middle ; anterior coxae large, somewhat laterally compressed and flattened on outer side ; anterior femora usually incrassate.

A small group of mostly dark coloured, terrestrial species of world-wide distribution

PIRATINAE (Stål), 1859

- Pronotum constricted about middle ; anterior coxae not especially large nor outwardly flattened ; anterior femora not or only feebly incrassate. A medium sized group of nocturnal mainly terrestrial species found amongst leaf debris, in rocky places and in houses, sheds and poultry houses. Distribution Cosmopolitan

REDUVIINAE (Amyot & Serville), 1843

KEY TO THE SUBFAMILIES OF PHYMATIDAE

1. Anterior tarsus 2-segmented, articulating normally with tibia and non-raptorial
THEMONOCORINAE¹ (Carayon, Usinger & Wygodzinsky), 1958
- Anterior tarsus fused with tibia and the two together articulating with femur to form a raptorial organ 2
2. Scutellum short not longer than broad, membrane of hemelytra with numerous veins extending from basal cells PHYMATINAE (Dohrn), 1859

¹ Carayon, Usinger and Wygodzinsky (1958) regard this group as annectent between Reduviidae and Phymatidae, sinking the latter to subfamily status under the Reduviidae and giving *Themonocoris* tribal status in the Phymatinae (our Phymatidae). To us it is a primitive Phymatid and should not be allowed to disrupt this very concise group.

- Scutellum longer than broad at base, often extending to apex of abdomen, rarely short and only slightly longer than wide at base in which case hemelytral membrane with not more than 5 longitudinal veins 3
- 3. Anterior legs with the apex of femur on the posterior side extended into a long process beyond the insertion of the tibia-tarsus, so that the femoral process and the tibia act as a pincer ; head and pronotum spinous ; hind wing without a hamus
CARCINOCORINAE Handlirsch, 1897
- Anterior legs as in Phymatinae, the femora not apically produced on posterior side but apically strong widened, the tibia-tarsus acting with the broad apex of the femur to form a pincer MACROCEPHALINAE (Amyot & Serville), 1843

KEY TO THE SUBFAMILIES OF TINGIDAE

- 1. Head strongly produced in front of insertion of antennae ; bucculae anteriorly produced and posteriorly not extending beyond anterior margin of prosternum ; pronotum posteriorly, obtusely rounded or angulate, rarely truncate and disclosing apex of scutellum ; hemelytra with discal call usually divided by transverse vein or veins into 2 or 3 areas.
Medium to small species, widely distributed in the Old World
CANTACADERINAE (Stål), 1873
- Head not or feebly produced in front of insertion of antennae ; bucculae not produced anteriorly but posteriorly strongly, backwardly produced and reaching anterior coxae ; pronotum posteriorly distinctly angulate ; hemelytra with discal cell entire, transverse veins absent 2
- 2. Hemelytra with areolations very small ; corium without distinct discoidal and subcostal areas ; pronotum without either a vesiculate hood or lateral paranotal dilations ; costal margin of hemelytra not dilated.
Very small, narrow, elongate species of world-wide distribution
AGRAMMINAE (Douglas & Scott), 1865
- Hemelytra usually with large areolations ; corium with distinct discoidal and subcostal areas ; pronotum usually with a vesiculate hood or hood-like prominence, often with paranotal dilations and with the costal margin dilated.
Small to medium sized bugs ; cosmopolitan . . . TINGINAE (Douglas & Scott), 1865

KEY TO SUBFAMILIES OF ARADIDAE

- 1. Genae reduced, not produced on either side of clypeus to form a cleft apex of head ; 3 equally developed dorsal abdominal scent gland ostioles 2
- Genae large, often surpassing clypeus to form a cleft apex of head ; only 2 distinct dorsal abdominal scent gland ostioles, the first large, the second rarely well developed, the third obsolescent 6
- 2. Rostrum free at base ; wings deciduous at a line of weakness level with apex of scutellum.
A small subfamily of strongly flattened, fulvous aradids from Chile, New Zealand, Australia and Tasmania ISODERMINAE Stål, 1872
- Rostrum enclosed by bucculae at base ; wings not deciduous and without the line of weakness 3
- 3. Metapleuron with a distinct scent gland ostiole in front of posterior coxa 4
- Metapleuron without distinct scent gland ostioles 5
- 4. Scent gland ostiole with a long curved seta ; juga well developed extending on each side of clypeus for nearly half its length.
A very small subfamily of primitive aradids from Australia, Tasmania and New Zealand PROSYMPIESTINAE Usinger & Matsuda, 1959
- Scent gland ostiole with a carina curved at apex ; juga reduced.
A very small subfamily of primitive aradids from New Zealand
CHINAMYERSIINAE Usinger & Matsuda, 1959

5. Scutellum large covering nearly all the abdomen ; hemelytra largely hidden and membranous ; edge of connexivum double.
A small subfamily mainly restricted to the Southern Hemisphere
CALISHINAE (Stål), 1873
- Scutellum small, covering only a small area of abdomen ; hemelytra completely exposed often with costal margins dilated at base.
A medium sized subfamily, mainly holarctic in distribution
ARADINAE (Amyot & Serville), 1843
6. Rostrum arising from an open atrium ; anterior dorsal abdominal scent gland ostiole of third segment not or slightly displaced backward.
A small subfamily of cosmopolitan distribution ANEURINAE (Douglas & Scott), 1865
- Rostrum arising from a closed atrium through a longitudinal slit-like opening ; dorsal abdominal scent gland ostiole displaced from third to median or posterior margin of fourth segment 7
7. Metapleural scent gland ostiole inconspicuous ; body more or less covered with a pale incrustation which forms a constant pattern and sometimes entirely obscures the integument CARVENTINAE Usinger, 1950
- Metapleural scent gland ostiole distinct, placed laterally behind the middle coxa ; usually narrow-elongate with a channel leading from inner end towards the median coxa ; sometimes (Chelonocorini) the metapleural scent gland ostiole is wide with a continuous peritreme that is isolated and without a channel leading to the median coxa ; body sometimes obscured by dirt but without a distinct patterned incrustation MEZIRINAE Oshanin, 1908

KEY TO THE SUBFAMILIES OF ENICOCEPHALIDAE

1. Pronotum divided into 3 lobes by two distinct transverse furrows. Male pygophor with neither mobile gonopods nor a distinct anal tube . . . *Enicocephalinae* (Stål), 1860
- Pronotum roundly narrowing from base to apex, not divided by two distinct transverse furrows into 3 lobes. Male pygophor with a pair of mobile gonopods and with a distinct anal tube *Aenictopechinae* Usinger, 1932
This last subfamily was suppressed by Usinger (1943) but has been reinstated by Villiers (1958).

KEY TO THE SUBFAMILIES OF CIMICIDAE

(based on the work of R. L. Usinger)

1. Clypeus narrowed apically ; rostrum very short, not reaching level of insertion of antennae.
A single American genus on cave bats (*Tadarida mexicana*) in North America (Texas) PRIMICIMICINAE Usinger (in press)
- Clypeus widened apically ; rostrum longer, usually surpassing base of head . . . 2
2. Bristles at sides of pronotum serrate on their outer edges ; metasternum widened posteriorly, plate-like between posterior coxae ; organ of Ribaga ventral on fourth or fifth segments of abdomen.
Parasites of bats and birds and man. Cosmopolitan . . . CIMICINAE Van Duzee, 1916
- Bristles at sides of pronotum not serrate on their outer edges, usually cleft or dentate at tips ; metasternum roundly lobed and more or less compressed between the hind coxae ; organ of Ribaga usually dorsal 3
3. Tibiae with short stout bristles in addition to short hairs.
Bugs predatory on birds including domestic fowl in America
HAEMATOSIPHONINAE Jordan & Rothschild, 1912
- Tibiae with fine bristles which may be short or very long but not stiff and spine-like.
Bugs predatory on bats in the African and Oriental Regions
CACODMINAE Kirkaldy, 1899

KEY TO THE SUBFAMILIES OF ANTHOCORIDAE

1. The hind wing cell with a distinct hamus (hook-like vein) 2
- The hind wing cell without a distinct hamus.
 Small species living under bark DUFOURIELLINAE Van Duzee, 1916
2. Hamus of hind wing cell arising from the vena connectens¹; the two apical antennal segments slender, filiform.
 Small predatory species in litter or stored products LYCTORINAE Reuter, 1884
- Hamus of hind wing cell arising from vena decurrens or from the vena subtensa ;
 the two apical antennal segments fusiform.
 Small, phytophagous and predatory species of cosmopolitan distribution
 ANTHOCORINAE Reuter, 1884

Note. The authors had considered the genera allied to *Bilia* Distant, previously placed in the Isometopidae, as forming a new subfamily of Anthocoridae distinguished from the Anthocorinae by the strongly convex margins of the pronotum and hemelytra, deep cuneal fracture and widely spaced ocelli. Carayon's recent paper (1958) in which he associates *Orius* and other genera with *Bilia* and regards the group as merely a tribe (Oriini) of Anthocorinae, has caused them to refrain from establishing such a new subfamily.

KEY TO SUBFAMILIES OF MICROPHYSIDAE

1. Rostrum either apparently 3- or 4-segmented but always with the formula 1, 4, 3, 2 (segments numbered from base to apex and arranged in order of length, shortest first) ; membrane with distinct venation in males ; females with ovipositor present
 MICROPHYSINAE China, 1953
- Rostrum apparently 3-segmented (that is first segment invisible), formula either 1, 2, 3, 4, or (*Nabidomorpha*) 1, 2, 4, 3 ; membrane always without venation ; ovipositor absent, female genital opening transverse PLOKIOPHILINAE China, 1953

KEY TO SUBFAMILIES OF NABIDAE

1. Metathoracic scent gland ostioles not visible between median and posterior coxae ; all tarsi 1-segmented ; tibiae with curious spatulate process at apex below insertion of tarsi ; underside of head with 2 pairs of spines ; underside of anterior femora spined as well as the usual bristly pubescence.
 A single genus of tropical American species CARTHASINAE Blatchley, 1926
- Metathoracic scent gland ostioles distinct between median and posterior coxae, placed nearer to the posterior coxa than to the median ; all tarsi 3-segmented, tibiae without an apical spatulate process ; underside of head and anterior femora without spines 2
2. Pronotum very strongly convex, laminately extended backwards on each side of base of scutellum ; median femora in male incrassate and spined ; abdomen narrowed at base ; ovipositor reduced ; hamus absent in wing.
 A single genus of tropical American species living in spider webs
 ARACHNOCORINAE Reuter, 1890
- Pronotum not very strongly convex, not laminately extended backwards on each side of base of scutellum, the posterior margin more or less straight ; median femora in male not incrassate ; abdomen broad not narrowed at base ; ovipositor well developed ; hamus present in wing 3
3. Anterior coxal cavities closed behind ; anterior coxae very long.
 A single genus of Oriental and African species GORPINAE Reuter, 1909
- Anterior coxal cavities open behind ; anterior coxae relatively short 4

¹ For definition of these terms see Parshley, 1923, *Guide to Ins. of Connecticut*, Part 4, Hemiptera, p. 670, fig. 153.

4. Pronotal collar reduced ; clavus narrowed posteriorly, the commissure shorter than the scutellum.
A small subfamily of rather brightly coloured, terrestrial species
PROSTEMMINAE Reuter, 1890
- Pronotal collar broad and distinct ; clavus broadened posteriorly, the commissure longer than the scutellum.
A large group of species inhabiting low vegetation and bushes
NABINAE Reuter, 1890

KEY TO SUBFAMILIES OF MIRIDAE

1. Arolia present, large and free 2
— Arolia absent, substituted by a pair of straight hairs 3
2. Arolia distinctly divergent towards their apices, usually dilated ; pronotal collar always present and well separated from pronotum by a furrow
MIRINAE (Amyot & Serville), 1843
- Arolia parallel or convergent toward their apices, usually slender ; pronotal collar if present of the depressed type that is at a lower level than rest of pronotum
ORTHOTYLINAE Van Duzee, 1916
3. Pseudarolia present, free or attached to the claw, sometimes minute, in which case pronotal collar absent 4
— Pseudarolia absent, pronotal collar present or if not claws very long smooth and slender 5
4. Pseudarolia arising from the base or inner margin of claw ; membrane with 2 cells ; tarsi linear PHYLINAE (Douglas & Scott), 1865
— Pseudarolia arising from the inner surface of claw ; membrane with 1 cell only ; tarsi thickened towards apices BRYOCORINAE (Douglas & Scott), 1865
5. Claws toothed or thickened at base DERAEOCORINAE (Douglas & Scott), 1865
— Claws not toothed or thickened at base CYLAPINAE Kirkaldy, 1903

KEY TO THE SUBFAMILIES OF CYDNIDAE

1. Feebly convex ; scutellum not extending to apex of abdomen ; clavus elongate extending to or almost to the apex of scutellum ; posterior margin of ventral surface of eye extending to posterior margin of ventral side of head ; hind wing without a small hole in the anal lobe behind the second anal vein 2
— Strongly convex ; scutellum extending to apex of abdomen ; clavus visible only as a small triangle on each side of base of scutellum ; posterior margin of ventral surface of eye not extending to posterior margin of ventral side of head ; hind wing often (?) with a small hole in the anal lobe behind the second anal vein
THYREOCORINAE Van Duzee, 1907
2. Head usually with distinct spines or bristles, often with an apical marginal fringe of spines or bristles, anterior tibiae broad and flattened. A moderately large subfamily of black or brownish bugs living on the roots of low plants, sometimes with the anterior and posterior legs modified for digging ; pairs of ventral abdominal trichobothria longitudinally arranged and more or less in line with the spiracles
CYDNINAE (Amyot & Serville), 1843
- Head destitute of spines and bristles, without an apical marginal fringe of spines ; anterior tibiae cylindrical towards base but triangularly dilated apically ; trichobothria in transverse pairs not in line with spiracles
SEHIRINAE (Amyot & Serville), 1843

KEY TO THE SUBFAMILIES OF UROSTYLIDAE

1. Corium irregularly punctured on disk ; 5 pairs of abdominal spiracles (3-7) all ventral ; rostrum short, not extending to median coxae ; wing with normal pentato-

moid venation, that is, with *Cu* and antevannal veins complete; vannals 1 and 2 and jugal vein all present.

Coreid-like bugs confined to the Oriental Region . UROSTYLINAE Dallas, 1851

- Corium unpunctured on disk between the distinct row of punctures along *R + M* and the row along the claval suture; 6 pairs of visible abdominal spiracles, second basal and ventral and 3-7 placed on lateral margin of connexivum; rostrum long, extending to fourth abdominal segment; wing with apical *Cu*, antevannal, vannals, anal and jugal veins absent.

Known only from a single specimen of a minute species from Borneo

SAILERIOLINAE China & Slater, 1956

KEY TO SUBFAMILIES OF PENTATOMIDAE

1. Prosternum with a deep, median longitudinal sulcus, the lateral margins of which (anterior lateralia) are strongly laminately elevated above the basisternum on each side of rostrum; primary vein (*R + M*) of hind wing remote from subtended vein (*Cu*), the basal cell so formed with a long (complete) hamus vein formed by the passing of *M* from *R + M* to *Cu* 2
- Prosternum without a deep, median longitudinal sulcus, lateral margins not strongly laminately elevated on each side of rostrum; primary vein (*R + M*) of hind wing more or less parallel with *Cu*; hind wing cell rarely with a hamus (Tessaratominae) in which case the hamus is short (not complete) 4
2. Tarsi 2-segmented; no veins on hemelytral membrane.
Minute blackish S. American bugs formerly placed in the Cydnid subfamily Thyreocorinae MEGARIDIINAE McAtee & Malloch, 1928
- Tarsi 3-segmented; at least several strong, longitudinal veins on hemelytral membrane 3
3. Antennae 5-segmented with the second segment very short, much shorter than the first; anterior margin of pronotum rounded into lateral margins, no anterior lateral angle.
Relatively small, black shining bugs of Neotropical distribution formerly placed in the Cydnidae CANOPINAE (Amyot & Serville), 1843
- Antennae 5-segmented, the second segment not shorter than the first; anterior margin of pronotum forming distinct angles with lateral margins.
A large subfamily of bugs, often very highly coloured and frequently metallic although some groups are dull brown in colour. Inhabiting flowering shrubs and trees, also Graminaceae (*Eurygaster*) SCUTELLERINAE (Leach), 1815
4. Spiracles of second abdominal segment always exposed; hind wing cell with spur-like (short) hamus.
Mostly large flattened bugs with dilated connexivum, Old World distribution TESSARATOMINAE (Stål), 1865
- Spiracles of second abdominal segment always covered by posterior part of metapleura; hind wing cell without a spur-like hamus 5
5. Tarsi 2-segmented; third abdominal segment spinuously produced mid-ventrally; eighth abdominal segment well developed, not ring like; meso-sternum medially longitudinally carinate; mostly phytophagous but some species have been recorded feeding on carrion.
Widely distributed ACANTHOSOMATINAE (Stål), 1864
- Tarsi 3-segmented very rarely 2-segmented; third abdominal segment not spinuously produced midventrally; eighth abdominal segment reduced to a ring and concealed; mesosternum not carinate. 6
6. Rostrum very short, not extending beyond anterior coxae; basal segment and a large part of segment 2 concealed within bucculae. Somewhat elongate or elliptical bugs with head acute anteriorly, the jugs in some species being separated.

- Found on low plants and Graminaceae. Ethiopian, Oriental and Australian Regions PHYLLOCEPHALINAE Dallas, 1851
- Rostrum not very short; 7
7. Basal segment of rostrum very thick.
Predacious bugs distributed in all Zoogeographical Regions
- ASOPINAE Spinola, 1850
- Basal segment of rostrum not thick 8
8. Antennae with 4 segments; pronotum and connexival segments with lateral foliaceous or thickened expansions 9
- Antennae with 5 segments sometimes with 4 (Dinidorinae); pronotum and connexival segments without foliaceous or thickened expansions 11
9. Bucculae obsolescent, shorter than basal rostral segment; scutellum short, as long as wide.
One species known at present from Malaysian subregion; habits unknown
- SERBANINAE Leston, 1953
- Bucculae distinct, as long as basal rostral segment; scutellum longer than wide 10
10. Basal antennal segment moderately long, slender; scutellum large with strong spine or projection arising from middle; scutellum covering part of abdomen.
A small subfamily of somewhat small dull Neotropical bugs
- CYRTOCORINAE Distant, 1880
- Basal antennal segment short, thick; scutellum much longer than wide without median spine or projection and not covering part of abdomen.
Subfamily containing few species distributed in the Oriental Region; found mainly in damp situations EUMENOTINAE Esaki, 1922
11. Bucculae closed posteriorly; hemelytral membrane reticulate; antennae 4-segmented, sometimes 5-segmented in which case hemelytral membrane usually reticulate.
Mostly dull coloured bugs of wide distribution DINIDORINAE Stål, 1870
- Bucculae open posteriorly; hemelytral membrane not reticulate; antennae 5-segmented 12
12. Tibiae sulcate on outer surface; basal rostral segment longer than bucculae; scutellum variable in size, mostly longer than wide, very rarely concealing abdomen and hemelytra.
Large subfamily living on a wide variety of plants; often of economic importance. Distribution world-wide PENTATOMINAE (Amyot & Serville), 1843
- Tibiae not sulcate on outer surface; basal rostral segment not longer than bucculae; scutellum longer than wide, often covering entire abdomen and hemelytra except corium.
Somewhat small dark coloured bugs, some of which are of economic importance. Distributed in Oriental, Australian, Ethiopian, Palaearctic or Nearctic Regions
- PODOPINAE (Amyot & Serville), 1843

KEY TO SUBFAMILIES OF THAUMASTOCORIDAE

1. Pseudarolia absent; apex of tibia bearing a lobate sensory appendage; males with 1 harpago present; pygophore with a lateral projection; apex of corium not extending almost to apex of membrane.
Distributed in Australia and Southern India THAUMASTOCORINAE Kirkaldy, 1908
- Pseudarolia present; apex of tibiae without a lobate sensory appendage; males without harpagones; pygophore lacking a lateral projection; apex of corium extending almost to apex of membrane. Known species feed on developing leaves of palms.
Distributed in West Indies and South America (Argentina)
- XYLASTODORINAE Barber, 1920

N.B. The subfamily Discocorinae Kormilev, 1955, listed on page 8 is regarded by Drake & Slater (1957, *Ann. Ent. Soc. America*, **50**: 368) as a synonym of Xylastodorinae Barber, 1920.

KEY TO SUBFAMILIES OF BERYTIDAE

1. Head elongate with vertex produced above tylus ; peritreme of metathoracic scent glands not produced.
Distributed in Palaearctic, Oriental and Australian Regions BERYTINAE Puton, 1886
- Head short with no process on vertex ; peritreme of metathoracic glands produced.
Distributed in Palaearctic, Oriental, Ethiopian, Nearctic, Neotropical and Australian Regions METACANTHINAE Douglas & Scott, 1865

KEY TO SUBFAMILIES OF COREIDAE

1. Apterous species. Spiracles located close to margin of abdomen ; those on segments 2 and 3 marginal and visible from above.
Small dull-coloured Aradid-like Coreids living among vegetable debris on forest floor. Australia AGRIPOCORINAE Miller, 1953
- Macropterous or at least brachypterous species ; spiracles ventral, in normal position away from lateral margin 2
2. Metapleural scent gland ostioles distinct, rarely (*Euthetus* and *Stachyocnemus*) obsolete ; fourth and fifth dorsal abdominal segments with basal margin lobately sinuate into preceding segment 3
- Metapleural scent gland ostioles absent ; if not, then ostioles placed between posterior acetabula and usually with 2 divergent sulci ; fourth dorsal abdominal segment medially sinuate at base and apex, or at least at the apex ; corium often hyaline in middle.
Medium to small phytophagous bugs living on low vegetation
RHOPALINAE (Amyot & Serville), 1843
3. Bucculae long, extending posteriorly (in lateral view) beyond the position of insertion of the antennae ; broader and more robust species with shorter and thicker legs ; often strongly sexually dimorphic, the males with posterior legs thickened and armed with spines or spurs 4
- Bucculae small, short not extending posteriorly beyond insertion of antennae, sometimes entirely anterior to antennophores. Narrow, elongate species with relatively long legs ; posterior femora in males often thickened.
Medium sized phytophagous bugs of world-wide distribution living on grasses and leguminous plants ALYDINAE (Amyot & Serville), 1843
4. Posterior tibiae with apex produced below into a tooth or spine ; head small, much shorter and narrower than the thorax.
S. American species MEROPACHYDINAE (Stål), 1867
- Posterior tibiae unarmed apically, rarely spined, in which case head large or only slightly shorter or narrower than thorax 5
5. Hind wing cell with a distinct hamus ; head in front of eyes without a median sulcus ; tibiae not sulcate on outer surface.
Small, usually setose bugs, Palaearctic, Nearctic, Ethiopian and Oriental regions PSEUDOPHLOEINAE (Stål), 1867
- Hind wing cell without a hamus ; head in front of eyes with a median sulcus ; tibiae sulcate on outer surface,
Large subfamily comprising a great diversity of forms classified into many tribes and of world-wide distribution. Includes numerous species of economic importance
COREINAE (Stål), 1867

Note. Some of the tribes of the Coreinae are worthy of elevation to subfamily rank.

KEY TO SUBFAMILIES OF LYGAEIDAE

1. Ocelli present 4
- Ocelli absent 2
2. Elongate species with acuminate head and long slender antennae and legs : Brachypterous.
 - Transcaucasia PHASMOSOMINAE Kiritshenko, 1938¹
 - Not elongate ; body oblong or elliptical ; head not sharply acuminate at apex ; legs and antennae not slender and elongate 3
3. Eyes large with large facets ; membrane with 3 or 4 veins ; body strongly pilose.
 - A single S. American species LIPOSTEMATINAE (Berg), 1879¹
 - Eyes small with large facets ; membranal veins obsolescent ; body only with scattered pale hairs.
 - An Eremian genus of the Palaearctic Regions CAMPTOCERA Jakovlev, 1877 (MEGALONOTINAE)
4. All spiracles situated on dorsal surface of abdomen 5
- All spiracles not situated on dorsal surface of abdomen 8
5. Apical half of corium narrow elongate, apex thickened ; antennae long, the second and third segments long and slender, the basal segment thickened ; ocelli more or less contiguous, connexival segments 5-7 with laminate, horizontal expansion.
 - Small subfamily. Oriental Region MALCINAE (Stål), 1866
 - Apical half of corium not narrow elongate, apex not thickened ; antennae relatively short, the second and third segments not very long and slender ; connexival segments 5-7 without laminate horizontal expansions 6
6. Corium shorter than hemelytral membrane ; connexival segments 5-7 laterally elevated ; eyes styleate ; antennophore with a distinct tooth in front of eye.
 - Distributed in Ethiopian and Oriental Region CHAULIOPINAE Breddin, 1907
 - Corium not shorter than hemelytral membrane ; veins of membrane distinct ; eyes not styleate ; antennophore without a distinct tooth in front of eye. 7
7. Hemelytra wider than abdomen ; costal margin of corium dilated ; corium distinctly punctate.
 - Small species distributed in all Zoogeographical regions CYMINAE (Stål), 1862
 - Hemelytra not wider than abdomen ; costal margin of corium not dilated ; corium not, or very feebly punctate.
 - Large subfamily of mostly brightly coloured species ; usually phytophagous ; 1 species recorded as feeding on carrion ; some species of economic importance. Distributed in all Zoogeographical Regions LYGAEINAE (Stål), 1862
8. Third ventral intersegmental suture not extending to lateral margin. Spiracles usually ventral but the basal 3 segments or some of them often with spiracles dorsal MEGALONOTINAE Slater, 1957
- Third ventral intersegmental suture extending to lateral margin 9
9. Spiracles all ventral 10
- Spiracles situated both dorsally and ventrally 11
10. Rostrum not extending to, or only a little beyond anterior coxae ; anterior femora incrassate and spinose on lower surface ; segments 5 and 6 of abdomen mid-ventrally wide ; hamus of basal wing cell arising from the vena subtensa.
 - Small subfamily of pale coloured species recorded from the Nearctic, Palaearctic, Sonoran, Ethiopian and Australian Regions PACHYGRONTHINAE (Stål), 1865
 - Rostrum extending beyond anterior coxae ; anterior femora not incrassate and spinose on lower surface ; segments 5 and 6 of abdomen mid-ventrally very

¹ We are not entirely convinced that these are distinct subfamilies and think that they are more likely to be aberrant genera of existing subfamilies as *Camptocera* is of the Megalonotinae. *Phasmosomus* Kiritshenko is remarkably similar in habitus to some of the Alydine Coreidae such as *Stachylobus* Stål and might indeed be an aberrant genus of that group rather than a Lygaeid. *Lipostemmata* Berg also seems likely to be an aberrant genus of Megalonotinae Lygaeidae.

narrow; hamus of basal wing cell arising from the vena connectens.

Small subfamily of small, somewhat hirsute species, distributed in all Zoogeographical Regions HETEROGASTRINAE (Stål), 1872

11. Spiracles on segment 2 of abdomen dorsal, on segments 3-7 ventral 12
— Spiracles differently arranged 13

12. Lateral margins of pronotum laminate; lateral margins of corium not widely laminate.

Small subfamily of small species distributed in Palaearctic Region

ARTHENEINAE (Stål), 1872

- Lateral margins of pronotum not laminate; lateral margins of corium widely laminate.

Moderately large subfamily of small, mostly dull-coloured, somewhat setose phytophagous bugs; some of economic importance. Distributed in all Zoogeographical Regions OXYCARENINAE (Stål), 1862

13. All spiracles dorsal, except on segment 7 where they are ventral. Somewhat narrow, elongate, mostly small, flattened species; head usually narrower than posterior margin of pronotum; sometimes with anterior tibiae modified for fossorial or raptorial purposes; brachyptery common.

Moderately large subfamily of mainly phytophagous species; some species possibly carnivorous; one known species myrmecophilous. Distributed in all Zoogeographical Regions except Mascarene BLISSINAE (Stål), 1862

- Spiracles differently arranged 14
14. Spiracles on segments 2-4 dorsal; on segments 5-7 ventral 15
— Spiracles on segment 2 ventral; on segments 3-5 dorsal, on segments 6 and 7 ventral.

Small species distributed in Palaearctic Region

HENESTARINAE (Douglas & Scott), 1865

15. Pronotum longer than wide, with a transverse sulcus near middle; scutellum as long as wide.

Small, somewhat delicate, elongate, pallid bugs. Recorded only from W. Indies

PAMPHANTINAE Barber & Bruner, 1933

- Pronotum wider than long, without a transverse sulcus in middle; head across eyes very broad; scutellum longer than wide.

Small, elliptical, more robust species. Distributed in all Zoogeographical regions except Mascarene GEOCORINAE (Stål), 1862

Note. The subfamily Bledionotina of Reuter (1878, *Ann. Soc. ent. Fr.*, p. 144) has been omitted from this key as we consider *Bledionotis* Reuter to be merely an aberrant genus in the subfamily Megalonotinae.

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